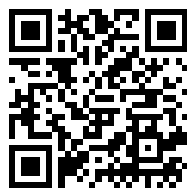

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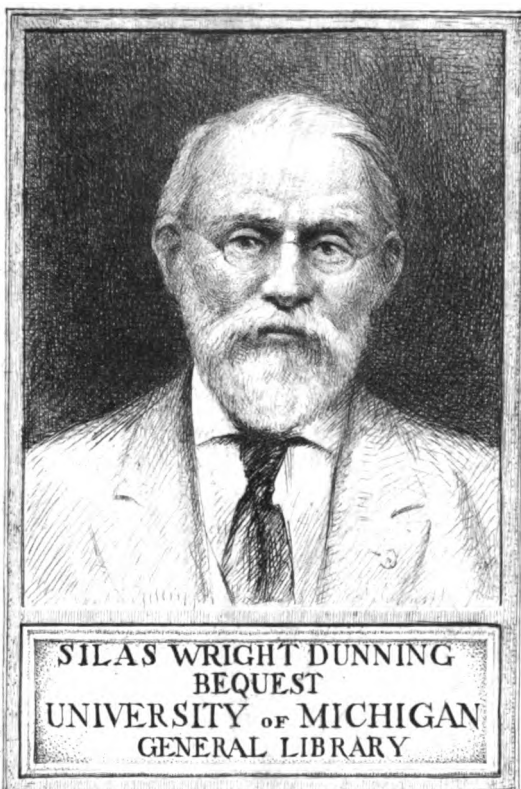
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And this whole question, apart from the jealousy, antipathy, greed and scheming of each European power for its own gain, resolves itself mainly into the very simple one of *Nationality*. Whenever this question of Nationality crops up, and when it depends on the will of such a very insignificant state as Greece to settle it, as she has been trying to do in Crete, the Unity of the Great Powers of Europe is subject to a very severe test.

There is another side to the question, which, in this matter-of-fact, stock-exchange age, is a very important one; and that is, How is Turkey going to pay the debts she owes to Europe? But I had better take up in order the different phases of the Eastern Question.

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The whole of the Balkan Peninsula was now practically in the hands of the Byzantines, and they held their power for nearly two hundred years. Towards the end of the eleventh and the beginning of the twelfth centuries the fierce tribes of the Petschenegians and Polavzians invaded the Byzantine Empire, from the north; the yellow-haired, big-boned Normans came all the way from the shores of the Baltic, landed in Albania, and conquered a part of Epirus and Macedonia; and the Bulgarians rose twice in rebellion, but were defeated with terrible slaughter, and many of their towns handed over to Greek colonists.

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In the meantime, the Servians had extended and strengthened their rule, at the expense of the Bulgarians. Under their ruler, Stephen Dusan, who reigned from 1331 to 1355, they conquered a large part of the Peninsula; but they did not succeed in getting any of the important seaports into their power. As far as Church matters were concerned, they followed the example of old Bulgaria, by establishing for themselves an independent State Church.

And now we come to a memorable epoch in the history of the Balkan Peninsula. In the long and sanguinary war between Bulgaria and Servia, the Byzantines, to keep the peace as far as possible, had recourse to the same expedient as formerly had the kings of the Britons against the Picts and Scots. They hired men belonging to a new and terrible race of invaders from the East—the Othman Turks. These fierce and brave hirelings were not slow to observe the beauty and richness, and also the inherent weakness of the new land. Their hosts came across the Hellespont, captured Gallipoli, Adrianople and Philipopolis; in 1389 they defeated and almost destroyed a huge Servian army on the terrible field of Kossovo; they went on conquering and to conquer; Semendria fell before them; and so did the Bulgarian capital, Tirnova, after a three months' siege.

The Hungarians, originally of the same family as the Turks themselves, collected together a large army to stem the rising flood of Othman conquest. The armies met at Varna, a seaport on the Bulgarian coast; and they fought all through a long summer's day, in the year 1444. The Magyar sustained his reputation as a stout fighting man; but the Turks, with their razor-like scimitars, hollow-backed and weighted with quicksilver to give additional force to every blow, mowed down the ranks of the Hungarians as reapers cut down ripe corn in harvest time. Nine years after this victory they gained their greatest victory by the capture of Constantinople after a long and brave defence; and since that time they have held undisputed rule on the banks of the Bosphorus. They conquered Hungary, and on two occasions, 1529 and 1683, carried the Crescent to the very gates of Vienna. But when Solymán the Magnificent was succeeded by Selim the Sot; when the Janissaries, sunk in luxury and debauchery, forgot the art of war for the inglorious pleasures of peace; when the Palace was ruled by eunuchs and the Divan by priests, then

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In the beginning of the thirteenth century, somewhere about the year 1204, Constantinople, the capital of the Christians of the East, fell before an army of Christians from the West,—an army for the most part composed of all the cut-throats in Europe, who had set out to fight for the Holy Sepulchre, the Crusaders from Venice, Lombardy, the Netherlands, and France—and the glory departed from the Empire of the East. The pieces into which it was broken set up as little principalities, partly under Latin, partly under Greek rulers. One of these latter, Michael Paleologos, conquered Constantinople in 1261, and so restored, at least by name, the Byzantine Empire, for a time. But it never regained its former power and importance.

In the meantime, the Servians had extended and strengthened their rule, at the expense of the Bulgarians. Under their ruler, Stephen Dusan, who reigned from 1331 to 1355, they conquered a large part of the Peninsula; but they did not succeed in getting any of the important seaports into their power. As far as Church matters were concerned, they followed the example of old Bulgaria, by establishing for themselves an independent State Church.

And now we come to a memorable epoch in the history of the Balkan Peninsula. In the long and sanguinary war between Bulgaria and Serbia, the Byzantines, to keep the peace as far as possible, had recourse to the same expedient as formerly had the kings of the Britons against the Picts and Scots. They hired men belonging to a new and terrible race of invaders from the East—the Othman Turks. These fierce and brave hirelings were not slow to observe the beauty and richness, and also the inherent weakness of the new land. Their hosts came across the Hellespont, captured Gallipoli, Adrianople and Philipopolis; in 1389 they defeated and almost destroyed a huge Servian army on the terrible field of Kossovo; they went on conquering and to conquer; Semendria fell before them; and so did the Bulgarian capital, Tirnova, after a three months' siege.

The Hungarians, originally of the same family as the Turks themselves, collected together a large army to stem the rising flood of Othman conquest. The armies met at Varna, a seaport on the Bulgarian coast; and they fought all through a long summer's day, in the year 1444. The Magyar sustained his reputation as a stout fighting man; but the Turks, with their razor-like scimitars, hollow-backed and weighted with quicksilver to give additional force to every blow, mowed down the ranks of the Hungarians as reapers cut down ripe corn in harvest time. Nine years after this victory they gained their greatest victory by the capture of Constantinople after a long and brave defence; and since that time they have held undisputed rule on the banks of the Bosphorus. They conquered Hungary, and on two occasions, 1529 and 1683, carried the Crescent to the very gates of Vienna. But when Solymán the Magnificent was succeeded by Selim the Sot; when the Janissaries, sunk in luxury and debauchery, forgot the art of war for the inglorious pleasures of peace; when the Palace was ruled by eunuchs and the Divan by priests, then

did the glory of the Crescent fade, and the Turks were driven back, step by step, until, at the beginning of the eighteenth century, they were confined to the boundaries of the Balkan Peninsula.

When the Christian peoples of the Peninsula were conquered by the Turks they were treated in the most inhuman manner, worse than if they had been outlaws. Not only were they loaded with heavy taxes, but a certain proportion of their male children were taken from them annually, by force, and trained up as soldiers in the army of the Sultan. They were at all times subject to ill-treatment and outrage, to put a stop to which the Government had seldom the will and still seldomer the power.

In order in some measure to get rid of, or avoid, this unbearable oppression, some of the subject Slavs embraced the religion of Islam; the number was not very large, but the new converts became more bigoted Musulmans than ever the Turks had been. A good many of the Albanians forsook the Christian faith to follow the doctrines of the Prophet; so did some of the Bulgarians, who, on account of this, got the name of "Pomaks." Rebellion was always smouldering above the Balkans and in the west of the Peninsula, now and then bursting up in spasmodic spurts of flame which were always quenched in blood. The heroes in these small rebellions were called "Haiducks;" and the songs and legends of these Haiducks still form the stock-in-trade of Bulgarian folklore. All this time not only were the Slavs oppressed by the Turks, but they were robbed of all independence in their religion, by the rulers of the Greek Church. There is no white man, not even the Jew, who knows so well how to flourish under tyranny as the Greek. And the Patriarchs of the Greek Church played their game so well that they gained a certain independence for themselves, and to them a still greater boon, the liberty of bullying their fellow-Christians. They suppressed the independent Patriarchates of Tirnova, Ochrida, and Ipek, and brought all professing Slavs under the direct rule of the Greek Patriarch at Stamboul. As a rule, there is no tyranny more cruel than that of a powerful religious community, and the ruling Greek priests, in this case, formed no exception to the rule. In a short time they had completely wiped out all traces of a national Slav Church, both in Bulgaria and Servia, and had substituted the doctrines of their own Church in its place. They persecuted with the greatest bitterness the followers of the old Slav Church; they collected and burned all the books they could find which were written in the Slav dialect. They got into their hands all the churches, religious houses and schools, and became a power, cruel and hated, in the land.

And now the question assumes for us a three-fold aspect—

(1) the rising of the subject races against their political oppressors;

(2) their impatience to throw off the yoke imposed on them from a religious point of view

(3) the jealous rivalry of Bulgarians, Servians, and Greeks, each striving to gain predominant power in the Peninsula.

The fighting of the Haiducks had given expression to the discontent of the subject races, but up to that time had never seriously threatened Turkish rule, until, in the beginning of the nineteenth century, the rebellion of some of the subject races assumed a purely political character, and now for the first time became a factor which European powers were compelled to take into account.

A rebellion which broke out in Servia, under Black George, in 1804, was certainly encouraged and supported by Russia, who went to war with Turkey in 1806. But Russia soon found that she had a more formidable enemy than Turkey to fight: the legions of Napoleon were tramping across Europe towards the east, flushed with the brilliant victories of Austerlitz, Ulm, Auerstaad, and Jena; and they would prove to be rough play-fellows. So the Peace of Bukharest was concluded between Russia and Turkey. According to the conditions of this Peace, Servia was still to remain tributary to Turkey. This did not suit Black George at all; so he continued the war, but he got badly beaten, and was driven across the Danube into Austrian territory. But a new rebel leader, Milosch Obrenovitch, sprang up in his place, who, after a few years' fighting, won concessions from the Sublime Porte which made Servia semi-independent. Now Black George came back again, but Milosch got him treacherously murdered—a crime that was never forgotten nor forgiven until a few years ago, when the great-grandson of Milosch and his wretched wife were hacked to pieces by the swords of the Servian officers.

Of much greater importance than the Servian rebellion was the Greek struggle for freedom which broke out in 1821. This was supported by some of the European Powers, notably England, and it brought on a Russo-Turkish War in 1828. In the next year, by the Peace of Adrianople, Turkey had to acknowledge the independence of Greece and the autonomy of the Danubian principalities. Greece elected a king from the German princely house of Wittelsbach; and the principalities had the privilege of electing their own Hospodars, or rulers.

The Russian Eagle now wished to take under the shadow of his protecting wing all members of the Greek Church, especially those living in Turkey. The Sultan naturally objected to this, and so Russia went to war. This war lasted from 1853 to 1856; and although it caused great excitement and unrest in the Peninsula, yet it left things political there nearly as it had found them. Servia was getting ready an army to assist Russia at the commencement of the war; but Austria stepped in and put a stop to any further military preparations on the part of the little State. Greece hoped at least for a great increase of territory, if not for the restoration in all its glory of the old Greek Empire. In the beginning of 1854, Greek officers and volunteers went into Thessaly, Macedonia, and Epirus, to stir up rebellion in these places; money and munitions of war were sent to them. The Turkish Government demanded an explanation; Greece returned a shuffling reply, and diplomatic relations were broken off between the two countries. But France

and England now appeared on the scene, and ranged themselves on the side of Turkey. The two Western Powers sent a sharp warning to Greece; and when this had no effect, a fleet of the allies appeared before Piræus, a body of French troops landed and took possession of the harbour. This brought the Greeks to their senses; they agreed to all the demands of the Western Powers, and promised unconditional neutrality.

In 1862 internal troubles in Greece caused King Otto to abdicate; and he was succeeded by the Danish Prince George. A great many moves were made now on the diplomatic chessboard into which it would be of little interest to enter here; but one of them was the presenting of the Ionian Islands to Greece by Great Britain.

In 1866 the Christians of the island of Crete rose up against Turkish rule and declared a union of the island with Greece. Volunteers, with arms, ammunition, and money, flowed into Crete; and in November 1868 the Greek Foreign Minister, Deliannis, openly declared that Greece intended to annex the island. Upon this, Turkey sent an ultimatum to Athens; it was not accepted: the Greek Ambassador left Constantinople, and a Turkish army was concentrated in Thessaly. But Greece had never the slightest intention of looking into the eyes of the grim Moslem, or of crossing swords with him: she appealed to the European Powers, who, after a sound rating, told her that she had to give up all interference in Crete, which she gladly did, and breathed freely at being let off so easily. It is interesting to note the attitude of Prussia all this time. There was no talk in Berlin about the "mailed fist" or the "Pomeranian grenadier;" nobody cared three straws for the opinion of Prussian statesmen. As far back as the year of Waterloo, a poor young Dane of good family got a charity scholarship in the Military Academy of Berlin. He was of small, slight build, with an expression of face so hard that it seemed to be cut in marble; square jaw, thin lips, and eyes of the clearest light blue. He was lent to the Turkish Government, in 1828, and he drew up a scheme for the defence of the Balkan Peninsula against any attack from the north. But this scheme was nothing to one he drew up, forty years afterwards, in the winter of 1868, for an offensive war against France, a scheme which was successfully carried out two years afterwards, and which could not help proving a success; for the man was Von Moltke. With Von Roon and Bismarck he reorganised the Prussian army, and made it the most formidable fighting machine of modern times. But it reached no perfection until about the middle of the sixties; and the Prussian threat of an attack on Austria, in 1856, in case that this Power interfered in the Crimean War, was mere empty bluff and nothing more.

Returning now to the Danube principalities, we find that, according to the Treaty of Paris, 1856, but in the teeth of the most energetic opposition on the part of Turkey, the two States of of Moldavia and Wallachia were united into one principality under the name of Roumania; and in 1866 Prince Karl of Hohenzollern

was elected as ruler. From this time onward Roumania may be looked upon as practically independent. The national Servian movement, which aimed at the union of all Servians, had attracted attention in the years 1848 and 1849 during the Civil War in Austria, when Servia encouraged, by presents of arms and money, the Servians who lived in Hungary to fight on the side of Austria against the valiant and patriotic Kossuth. The Magyars, with their retentive memory for injuries received, which is a strong trait in the character of all Asiatic peoples, have never forgotten this, and have never forgiven Servia. And it will be found that on the death of the present Austrian Emperor, when the Dual Empire falls to pieces and Hungary becomes absolutely independent, the Magyar will take a heavy and bitter revenge. I have often talked to Hungarians about Servia, and to Servians about Hungary; and I always found that the hatred of each towards the other was like the natural hatred between dogs and wolves.

Of all the tributary States of the Ottoman Empire there is none which has always been better treated than Servia. And yet, in 1862, the Servians rose up and massacred every Turk, man, woman, and child on whom they could lay hands. The Turks who were left alive fled from Servia; only Belgrade and a few smaller fortresses acknowledged the authority of the Sublime Porte, and the Turks cleared out of even these places in 1867.

In the meantime, the constant struggles of the Bulgarians against the tyranny of the Greek Patriarchate in Constantinople had pushed the question of Bulgarian nationality to the front. In the year 1835, and in the town of Gabrova, the first national Bulgarian school was founded by public subscriptions, and the first Bulgarian periodical was published in 1844. The number of schools quickly increased; education brought in its train all its usual blessings, and the social condition of the people improved all round. The higher dignitaries of the Church, nearly all of whom were Greek by birth, had no respect from, and very little influence over, the people; so the Bulgarians demanded Bishops of their own nationality. Strange to say, the Turkish Government granted this demand, gave them Bulgarian Bishops, with the title of "Exarch," and after many years' slavery the Bulgarian National Church became free and independent again, in 1872.

The war which, under different names and forms, raged over the Balkan Peninsula from 1875 to 1878, was purely and simply a war of nationalities. Servia, always ambitious, sullen and turbulent, had, in the beginning of 1875, sent emissaries all over Bosnia and Herzegovina to preach and stir up rebellion. But the population in these lands is not in the least warlike; and the wretched, ragged, half-starved, badly-armed mob which the Turk swept from the field of Bania Luka and chased all the way to the banks of the Save was not worthy even of the name of a rebel army. Austria was looking on at these events with the greatest interest; for she wants a clear run down through these lands to the valley of the Vardar and the

beautiful harbour of Salonika. The Bosnian was crushed; but the Bulgarian is a man of different mettle, and the men of the Eastern Balkans were in deadly earnest this time. In the Sredna Gora, Gabrova, and Kotal, they stood up face to face against the Turkish troops; but they were beaten with tremendous losses. Then began that wholesale butchery of the inhabitants which will go down in history as an everlasting stain on the name of Turkish rule. European diplomatists sent warnings, Mr. Gladstone wrote pamphlets, and made speeches; but the murder and massacre went on without ceasing; as the Turks themselves say, "The dogs may bark, but the caravan keeps moving on all the same." At last, in 1876, Servia and Montenegro took up arms to assist the Bulgarians against the common oppressor. Montenegro was fairly lucky in a few small fights; but what she did had but very little influence on the general course of affairs. Servia, on the other hand, was very unfortunate; and, although her army was led by experienced Russian officers, she was hopelessly beaten on the field of Dyunis, on the last day of October 1876. The road into Servia now lay open to the victorious Turk, and there was nothing to prevent the Crescent from proudly floating again over the white bastions of Belgrade. But just at this time a leading article appeared in the *Moscow Gazette*, the most astounding words ever read in a Russian newspaper. The last sentence ran like this: "The Russian people will, if necessary, go to war for the sake of their co-religionists and brothers who are groaning under the iron rule of the Turk; and if the Czar will not lead his people to the war, the people will go to war without the Czar;" and that this was no mere bluff was proved by the fact that the day after the article appeared the Czar sent an ultimatum to Turkey to say that any further advance into Servia would be looked upon as a *casus belli*. So in February 1877 a short and hollow peace was patched up. But it did not last long, nor was it ever meant to last. The fact of the matter is that Russia wanted to fight, and she easily found an excuse in the notorious Bulgarian atrocities. Up to the present it was only the little dogs playing about the arena; but now the doors of the dens were open and the lions were to be let loose.

All over the beautiful but unhappy land from the Danube to the sea, over the cornfields of Rumelia, the green valleys at the foot of the Balkans, and the rose-gardens of Kezanlik, the horrors of a great war wrought havoc and destruction.

The principal events of this war and the state of the Balkan Peninsula since then are worthy of a special article to themselves. The events which took place and some of the sights I saw during that terrible time are indelibly fixed in my memory much deeper than if they had been the greatest pleasures of life. A man may forget what the furniture was like in a hotel where he had champagne dinners every night in the week; but he will never forget his surroundings when in scenes of pillage, and murder, and blood, and death, he had to live on half-raw potatoes and melted snow.

NAPOLEON AND ORIENTAL CONQUEST.

BY MAJOR R. G. BURTON, 94TH RUSSELL'S INFANTRY.

In his speech on Imperial Defence in May last, Mr. Balfour said: "The invasion of India has been the dream of many military dreamers in the past, and it has been the bugbear of successive Governments in this country. Napoleon certainly thought it could be accomplished, and I believe he thought it could be accomplished even after his abortive expedition to Egypt." That it has been not merely a dream, but in many instances an accomplished fact, was fully set forth by the present writer in the 'Journal' of this Institution for July 1903, when a description was given of all the invasions of India recorded in history from that of Alexander of Macedon in 327 B. C. to the incursions of Ahmad Khan between 1747 and 1759. It may be interesting to pursue still further the subject of Oriental conquest, in so far as it was carried out by Napoleon Bonaparte in his expedition to Egypt or projected in the soaring imagination of that extraordinary man.

Napoleon had always been attracted by the Orient. In his youth he had studied Plutarch, and already at Campo Formio he had remembered the "Philosophical and Political History of the Two Indies" when he said—"Europe is a mole-heap; only in the East have there ever been great Empires and great cataclysms; in the East there are six hundred millions of human beings." And he also remarked, after his first Italian campaign—"My glory is already at an end; there is not enough of it in this little Europe. I must go to the East; all great glory comes from there." A sentiment worthy of the man who had said—"I hold the immortality of the soul to be the remembrance which we leave behind in the minds of men. This thought is an inspiring one; it were better not to have lived at all than to leave no trace of one's existence behind."

From childhood the East had been opened to his fertile imagination by the study of the expeditions of Alexander the Great, by the works of Plutarch, Herodotus, Strabo, and Diodorus. It has even been said that he had applied for service under the British East India Company. Certainly the idea had been entertained, for Lucien Bonaparte tells us in his 'Memoirs' that in 1793 Napoleon had spoken longingly of India, and of the English Empire there, destined to spread with every year, and of the career thus opened up for good artillery officers, who were scarce in the British service; and he said at this time—"If ever I choose that career I hope you will hear of me. In a few years I shall return thence a rich Nabob and bring fine dowries for our three sisters."

It was natural that, in his visions of Oriental Empire, the thoughts of Napoleon Bonaparte should first be directed to Egypt. That country lay on the threshold of the Orient, and had been

connected with India and the East from time immemorial. Alexander, on his way to the conquest of the Punjab, had founded the great city which bears his name on the banks of the Nile.

Napoleon would follow in his footsteps, first conquering that fertile land on the borders of the desert, where from the summits of the pyramids forty centuries would look down upon his deeds. Beyond—the Red Sea and the Persian Gulf bore the vessels and commerce of the Indian coasts; the Euphrates and the Tigris watered the western portion of the ancient Empire of Darius, while a canal across the Isthmus of Suez had been suggested by d'Argenson in 1738, and was a possibility of the future to Bonaparte, who located the canal of Sesostris.

On April 12th, 1798, the Directory ordered the preparation of the Army for Egypt, and "the Citizen Bonaparte, at the moment General-in-Chief of the Army of England, is named General-in-Chief of the Army of the Orient." In orders issued on the same day the right of the French to keep open a road to India is insisted upon. The army consisted of some 30,000 men, equipped as though for a permanent occupation of Egypt, and accompanied by a posse of savants who were to explore the temples and the pyramids, and enquire into the mysteries of the Pharaohs and the Ptolemys. This force was conveyed in 400 transports with a convoy of 13 ships of the line, 8 frigates, 78 corvettes, gunboats, etc., the whole under Admiral Brueys with General Bonaparte on board the *Orient* in chief command.

On May 10th at Toulon, the General issued a stirring order—"You have warred in mountains, in plain, and in sieges; it remains for you to make war at sea. The Roman legions, which you have emulated but not yet equalled, contended with Carthage on these same waters and on the plains of Zama. Victory never deserted them, because they were brave, constant in bearing fatigue, disciplined and united. Soldiers! the eyes of Europe are upon you!"

On May 19th the expedition sailed from Toulon. Bonaparte was ready either for a return to France "when the pear was ripe," or to carve out for himself an Empire in the East. He said to his brother Joseph—"I go to the Orient with every means to ensure success. If France has need of me; if the number of those who think like Talleyrand, Sieyès, and Roederer increases; if war breaks out and is unfortunate for France, then I shall return, more assured of public opinion than now. If, on the other hand, the Republic is successful in war, if a political General like me appears and centres the hopes of the people in himself; well, still in the East I shall perhaps do greater service to the world than he."

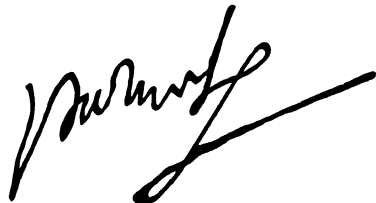
On June 11th Malta was taken, and on July 1st the fleet reached Alexandria, the army entering the town the following day, directed by Bonaparte from the steps of Pompey's pillar, and meeting with slight resistance. It is interesting to note the similarity of this expedition, in many respects, with those undertaken by our own army nearly a century later. A flotilla of boats was organised by

Dugua at Rosetta to accompany and support the army on the waters of the Nile. A camel corps was raised, and the tactical formation of squares, with the baggage in the centre, was adopted for moving across the desert in the presence of an enemy.

On July 5th the army, 21,000 strong, marched on Damanhur, followed by the flotilla on the Nile. Ramaniyeh was reached on July 10th, and the same day Desaix's Division defeated a body of Mamelukes who had been sent out from Cairo to oppose the French advance. On July 21st, the French army encountered the Mamelukes under Murad Bey near Embabeh, where 5,000 horse and as many fellaheen were drawn up to contest the advance on Cairo. The flotilla of Nile boats, armed with guns, moved up the river to support the troops, which marched on the left bank, five divisions in five squares, the men six deep, and the baggage in the centre of each square. In sight of those great monuments, which are the wonder and mystery of ages, the glittering host of Mameluke cavalry charged boldly down upon the serried ranks of their enemies. But their reckless gallantry was of no avail against European discipline, and they broke back like waves from a rocky shore, leaving some thousands dead and wounded, while the French lost only three hundred.

Next day the French entered Cairo, and Bonaparte saw fulfilled the first stage on his way to Oriental Empire. On the march to the great city of Egypt his imagination took a bold flight. He himself said—"I saw myself freed from the fetters and constraints of civilisation; I dreamt all sorts of things, and saw the means of carrying out what I dreamt. I pictured myself on the road to Asia on an elephant, a turban on my head, and holding in my hand a new Koran, which I had written myself from my own inspiration. I should have combined in my enterprises the traditions of the two worlds, putting under contribution for my own advantage the whole domain of history; I should have attacked the British Empire in India, and restored my connection with old Europe by that conquest." Nor were these merely the dreams of a visionary, for he took a practical view of a move on India. On the 30th August he wrote to the Directory: "Mistress of Egypt, France will by and by be mistress of India;" and in January 1799 he addressed to Tipu Sultan the following letter, to which a facsimile of his signature is appended:—

"You have been instructed as to my arrival on the borders of the Red Sea with an innumerable and invincible army, filled with the desire to deliver you from the iron yoke of England. I hasten to request you to give me, by way of Muscat or Mecca, news as to your political situation. I would like you to send to Suez some able man in your confidence with whom I could confer."



Moreover, in November the Directory had urged him to march towards India, and join Tipu Sultan, or else to march on Constantinople.

Meanwhile the French fleet was destroyed at Aboukir by Nelson on July 31st, and the army was cut off from their base and deprived of supplies and reinforcements. But the great French General was nothing daunted by this misfortune. "This is the moment," he said, "when characters of a superior order assert themselves;" adding, on another occasion, "The English will compel us to do greater things than we intended." Thus isolated, he would march towards the rising sun and would return from a tour of Eastern conquests at the head of Eastern nations and so march back through Central Asia on the footsteps of Alexander, through Vienna to Paris. He continued to consolidate and strengthen his position in Egypt. Desaix defeated Murad Ali's Mamelukes, and drove them into the desert. Attempts were made to conciliate the people. Some of the French, including General Menon, embraced the Musulman religion, while Bonaparte himself pronounced the creed of the Prophet in the tomb of Cheops, and he received from the natives recognition as E Kebir, the Exalted.

In the meantime the Turks, under Djeddar, were taking up a menacing position in Syria, for the Sublime Porte had taken the side of the enemies of France after the destruction of Bruey's fleet in Aboukir Bay. By the end of January the French army was ready for the expedition into Syria, which was headed by Kleber with 12,000 men, who advanced to El Arish, dispersing some Mamelukes on the way.

Bonaparte left Cairo on the 10th February, arriving on the 16th at El Arish, and forced that place to capitulate on the 20th. Advancing over country famous in the Scriptures and in the wars of the Crusades, the French General took Gaza on the 24th, and Jaffa on the 17th March, the latter falling by assault after ten days' siege. Two thousand of the garrison were killed and 2,000 taken prisoners, the latter being shot, as they could not be supported with the army, and to release them would have been to augment the enemy's strength for resistance. Bonaparte has been subjected to much obloquy for this execution of prisoners, for which, however, there appear to have been sufficient military reasons. War, to be effective, must be terrible, and so-called humane methods in the conduct of operations which have destruction for their object generally result eventually in greater loss of life. There can be no humane war except in the imagination of politicians whose object is to turn anything into a party cry for their own advantage. Napoleon Bonaparte was no less humane than other men, but he did not shrink from sacrificing life where it was necessary for the attainment of military requirements. With regard to the execution of the prisoners of Jaffa, it is interesting to quote the views of a late distinguished member of the German General Staff, Count Yorek von Wartenburg, who says: "In the eyes of merely didactic

historical writers, this deed may appear horrible and revolting, but practical military history must not consider it as such. The safety of one's own army, on which the possibility depends of ultimately gaining the victory, must outweigh all other considerations. If such an act is necessary for the safety of one's army, it is not only justified, but its repetition in any future war would be advisable, and no convention could alter this fact. In the exceptional circumstances of warfare, no other motto is permissible but this, *Salus publica summa lex*.....Bonaparte possessed the strength of mind to be hard, and to look on men at certain times as mere counters; and this strength of mind a General must possess."

On March 17th, 1799, the French army encamped in the plain of Acre, a strongly fortified town, held by a Turkish army under Djezzar, and celebrated in the wars of the Crusades, when it had been held by the Knights of St. John for a hundred years. An English squadron, under Sir Sidney Smith, was in the offing, and opened fire on the French, who had no guns, as their siege artillery had been sent by sea from Alexandria. This the British Admiral guessed, as there was no reply to his fire, so he put to sea again, captured the French siege train, and utilised it for the defences of the town, which were placed in charge of an *émigré*, Phélippeaux, who had been at the Military School at Paris with Bonaparte. Under this able direction the garrison offered a stubborn resistance, and in the absence of artillery the valour of the assailants was futile. After a siege, that lasted sixty-two days, characterised by desperate assaults on the part of the besiegers and equally desperate sorties by the besieged, Bonaparte withdrew his forces with a loss of four thousand men. The one bright spot in the expedition was the defeat, near the foot of Mount Tabor, of a large Turkish army sent from Damascus to raise the siege of Acre. The retreat began on the night of the 20th May, and the 350 miles to Cairo were covered in 26 days, a remarkable performance considering the climate and nature of the country. Early in July a Turkish army, some twelve thousand strong, set sail from Rhodes, escorted by a British fleet, and landed on the Peninsula of Aboukir on the 20th July. Here the troops entrenched themselves strongly, hoping for the co-operation of Murad and his Mamelukes, who had been driven into the desert by Desaix, and had retreated as far as the third cataract on the Nile. But Murad was unable to advance beyond the Pyramids, where he died of plague on the scene of his first defeat. On July 25th Napoleon attacked the Turks with all his forces, and carried the entrenchments, driving the enemy into the sea, where all perished except about three thousand, who took refuge in a citadel at the head of the Peninsula. The victory was largely due to Murat's cavalry, which rode round the line of entrenchments and cut in upon the flank of the retreating Turks. On the 1st August, the anniversary of Nelson's victory in the battle of the Nile, the remainder of the Turkish army surrendered. Not a man had escaped of all the host which had landed only ten days before.

Bonaparte now decided to return to Europe with the prestige gained in the battle. His repulse before Acre had, for the time being, dissipated his dreams of Oriental Empire. He had been kept informed of events in France, where his presence was urgently required. He could hope for nothing by remaining in Egypt, between which and Europe stretched the expanse of the Mediterranean, where British ships were supreme. But in continental Europe, beyond the tideless sea, an ocean of events, fraught with the most dramatic happenings in the world's history, awaited the coming of the Man of Destiny. The hour had struck; "the pear was ripe;" and on August the 22nd the General embarked near Alexandria, and set sail for France. Although the failure of the Egyptian expedition had led to the temporary abandonment of his schemes of Oriental Empire, Napoleon Bonaparte did not cease to be attracted by the glamour of the East.

In the year 1800 a treaty of peace was concluded between France and Russia, and experts were appointed by the Emperor Paul to consider the question of a combined Franco-Russian invasion of India; and in 1801 two expeditions were proposed, a Russian one through the Ural Mountains to the Indus (a rather vague proposition) and a French one through Persia, of which it is recorded that "the plan for the latter was worked out in the minutest detail, and every item was carefully commentated on by Bonaparte."

Again, in January 1805, when prepared for the invasion of England, we find Napoleon proposing to attack the East Indies with the Brest squadron and 30,000 men, and in the year 1802 Sebastiani had been despatched to the Levant to enquire into Persian affairs; the results of his expedition being published in the "Moniteur" of January 30th, 1803. Early in 1807 a treaty was concluded with the Shah, who had sent an envoy to Europe, under the terms of which, Sloane* tells us, "France promised to drive Russia from Georgia, and to supply Persia with artillery; in return the Shah was to break with England, confiscate British property, instigate the peoples of Afghanistan and Kandahar to rebellion, set on foot an army to invade India, and in case the French should also despatch a land force against India, he was to give them free passage along a line of march to be subsequently laid out, together with means of sustenance." Consequent on these intrigues, more than one British embassy was despatched to Persia, both from England and India, the best known being Sir John Malcolm's mission.

From this time onwards the idea of Oriental Empire continued to grow in the mind of Napoleon. It was discussed at Tilsit with Alexander of Russia, who wrote in February 1808 proposing to march into Asia by way of Constantinople, saying that "the Euphrates would not be reached before England would begin to tremble One month after an agreement we could be on the Bosphorus By May 1st our troops could

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A PRECIS OF "A STUDY OF THE RUSSO-JAPANESE WAR" BY "CHASSEUR."

BY CAPT. G. M. ORR, 11TH P. W. O. LANCERS.

A series of letters have been appearing in Blackwood's Magazine since January last under the heading of "A Study of the Russo-Japanese War" by a writer styling himself "Chasseur."

They are admirable reading, and by the courtesy of both author and publisher I have been permitted in the following paper to put before our members a short account of the war up to and including the battle of Liau Yang, as nearly as possible in "Chasseur's" words.

Passing over the reasons why Japan should take on herself this great war we will commence by noting her preparations before hostilities.

For many years she seems to have been preparing for a war with Russia, and her army and navy were undoubtedly in a state of great efficiency. Her system of intelligence was excellent, and was ubiquitous. By her alliance with England she had secured, as "Chasseur" puts it, "a Ringkeeper" and could proceed to handle whatever force Russia might bring against her.

At the end of January 1904, although Russia's suspicions had been sufficiently aroused to make her give orders for large consignments of tinned meats and stores, yet she was in no way ready for the war that Japan was preparing to bring against her. Everything in Japan was ready to the smallest detail and her navy and transports merely waiting for the propitious moment. The war may be said to have commenced when on the 6th February Admiral Togo sailed from Sasebo.

The first objective of the Japanese plan of campaign was Korea; and it is easy to see why. The theatre of war was to be Manchuria. To enable them to throw their armies into Manchuria the command of the sea was necessary to them. The task of obtaining this was given to Admiral Togo, and it was essential for his offensive strategy that he should be able to utilise certain harbours in the north of Korea.

To prevent the Russians establishing a land supremacy in Korea which would control the harbours, the Japanese saw they must get there first.

They considered, then, that they must first establish themselves in the capital of Korea, *i.e.*, Seoul, and then in Ping Yang, as soon as possible; Ping Yang, as can be seen from its position, is the main strategic point in the north of the Peninsula, the possession of which was important to both sides.

Their preparations were all to one end—to seize the initiative with all its attendant advantages; and so while Togo steamed to

Port Arthur, Admiral Uriu with a cruiser squadron proceeded to the harbour of Chemulpho, and there on the 8th February, under the noses of three Russian vessels (a cruiser, a gunboat and a volunteer steamer), was landed a portion of the 2nd Division; while at the same time one company was landed at Haiju. This company was to move by forced marches to Ping Yang. Next morning Uriu challenged the Russians to come out and fight; they came out, but thought better of it, turned, and preferred to sink themselves and blow themselves up in the harbour. Meanwhile on the night of the 8th Togo had made his first attack at Port Arthur and paralysed the Russian fleet.

As a defensive base for the Japanese fleet, Mokpo had been originally chosen; but as soon as Togo found he could safely take the offensive against the Russians, he moved his base to behind the Sir James Hall Islands. Thence, as soon as the harbour of Chinampo was sufficiently free from ice, Togo sent up a squadron of coast defence ships, which secured it, and by the 15th March Kuroki's army was disembarked there. The first army, consisting of the Guards Division and the 2nd and 12th Divisions, had been waiting ready in their ships for the securing of this harbour.

All the rest of March the 1st Army was pushing on the invasion of Korea, and by the middle of April Togo felt he could once more move forward his base, which he did, to the Elliott Islands, and at the same time the coast defence squadron at Chinampo was able to move up to the mouth of the Yalu, and Kuroki had advanced to Ping Yang; by the end of April he was fully established on the south bank of the Yalu, while the 2nd Army under Oku, consisting of the 3rd, 4th and 1st Divisions, was waiting for the signal of the successful crossing to begin its appointed task.

"Chasseur" proceeds to show that it was on this movement of the 2nd Army that the Japanese main hope of success hung. It was destined to isolate Port Arthur, and it was consequently intimately connected with Togo's strategy. After isolating the great fortress its duty undoubtedly was to at once march north and frustrate any attempt to raise the investment; while the actual operations against Port Arthur from the land side were entrusted to another army.

On May 1st Kuroki forced the passage of the Yalu, on the further bank of which General Sassulitch was posted with not more than 20,000 men, Kuroki's army numbering at least 50,000. On May 5th Oku had begun to disembark at Pitsewo, and by at once pushing a small portion across to Pulientien, he destroyed the railway, occupied Port Adams, and then disembarked the remainder of his army at Kerr Bay.

It is evident that the Japanese had their plans fully prepared to meet the case should they be successful; but they were not prepared for such a rapid breakdown of the Russian defence either in North Korea or on the sea at Port Arthur. Their 1st Army had crossed the Yalu and their 2nd Army had been ready to be conveyed to some point on the Liau Yang Peninsula, but the 3rd Army and the

4th Army with the siege train destined for Port Arthur were not ready.

However, on May 19th the 3rd Army under Nodzu, consisting of the 5th, 6th and another Division (probably 8th), landed at Takushan.

It was now they made the mistake which militated against their bringing the war to a more rapid and successful conclusion. The essence of the first phase of the plan of campaign was the rapid advance up the Liau Yang Peninsula of a force superior to anything the Russians could concentrate or organise in the time. But, as has been said, their successes had come too quickly, and they failed to rise to the occasion and alter their plan of action; by which I mean that when they saw that Nogi's army could not get to Port Arthur, whose siege it was destined to undertake, they should, surely, have sent Nodzu's army to Kerr Bay instead of Takushan, and thus have freed Oku for the northward march. However, they ordered Oku south to complete the cutting off of Port Arthur and to wait for Nogi's army, thereby adhering to the letter rather than to the spirit of their great plan, which now revealed itself.

Looking at the map we will see there are three roads from the sea converging northwards on Liau Yang [map at end].

On the right is the Mandarin road from Seoul to Peking, passing through Feng-Whang-Cheng and the Motienling, the distance from Feng-Whang-Cheng to Liau Yang being about 80 miles.

In the centre is the road from Takushan through Siuyen, the distance from Takushan to Liau Yang being about 100 miles and north-east to Feng-Whang-Cheng 50 miles.

On the left is the road almost parallel with the Port Arthur-Mukden Railway, the distance from Pulientien to Liau Yang being about 140 miles, and Pitsewo to Takushan 70 miles.

At Feng-Whang-Cheng was Kuroki's 1st Army (the 2nd, 12th, and Guards Divisions, 50,000 strong).

At Takushan was Nodzu's 4th Army (the 5th, 6th and 10th (?) Divisions, 50,000 strong).

At Port Adams was Oku's 2nd Army (the 1st, 3rd and 4th Divisions, 60,000 strong).

So that we have the Japanese army 160,000 strong, covering a front of 120 miles on three roads converging on Liau Yang.

The Russian forces at this time were as follows:—

At Port Arthur	...	...	...	35,000
On the Pacific Coast	...	...	...	20,000
Recently mobilised and practically worthless	...	...	...	25,000
				80,000
Balance	...	...	...	90,000
Total	...	...	...	170,000

NOTE.—According to the official accounts Nogi's army of Port Arthur was called the 3rd Army, while Nodzu's was styled the 4th. I have consequently referred to the armies under the names of their commanders to avoid confusion.

From the 90,000 "balance" stops had to be furnished for Motienling, Siuyen and Kairing, leaving about 30,000 for a field army.

In the great advance of the three Japanese armies Oku, on the left, was to operate on the fringe of the Liao Ho plain following the trend of the railway and more or less on the flat.

In the centre, Nodzu, before he advanced on the same front as Oku, had to traverse the underfeatures of the big mountainous mass. On the right, Kuroki's way was even more difficult—the mountains were higher and there were more of them. Opposite to him were two ranges, in the easternmost of which was the Motienling pass, and this was separated from the other by about six miles. Both ranges ran north and south, and between them was a great valley.

The climate of Southern Manchuria is extreme. In winter the country is icebound for four months, while the summer heat is dry and easily endured. Half the yearly rainfall of about 13 inches falls in July and August. When the country is icebound, the roads, bad at their best, are suitable for cart traffic; but when it rains or thaws they are impracticable. Under such conditions the question of transport must have taxed the ingenuity of both sides to the utmost. In the Japanese army each unit brought with it a certain number of light pony carts for obligatory transport, and a pony pack train for ammunition supply. Their main supplies were brought by locally hired cart trains plying between five sea bases and the front, while the advanced bases distributed it by means of brigade transport.

The Russian army made all the use that was possible of the railway, and for local distribution depended on local hire.

We will now look with "Chasseur" into Kuropatkin's position. We will not enter into the question "Whether Port Arthur was held against his advice or not?" but as it was to be held, what was his plan of campaign? First and foremost, to delay the Japanese in their advance—to keep them striking at his extremities until his energy had made a staff and the Siberian railway had given him an army. All his dispositions were to gain time. Sassulitch's force on the Yalu was merely a delaying force, and the garrison of Port Arthur became the same. This, then, was how he utilised Port Arthur. The series of entrenched positions along the railway and the Mandarin road were to the same end. But it was Port Arthur that proved the magnet to which his enemy clung. If only Oku had been freed at once he could have been at Tashichau before Kuropatkin had half completed the concentration of his 1st Army.

So the rapid advance to the Yalu and the unexpected successes both there and by the fleet before Port Arthur, which enabled the 2nd Army to be landed so soon on the Liao Yang Peninsula, were counterbalanced by the failure of the Japanese to see the tremendous importance of their real objective—Kuropatkin's army—owing to the fatal attraction of the fortress, which was surely a secondary objective.

Thus the Japanese by this mistake so far helped Kuropatkin in that they gave him time to equip a field army and push it down to

Moreover, in November the Directory had urged him to march towards India, and join Tipu Sultan, or else to march on Constantinople.

Meanwhile the French fleet was destroyed at Aboukir by Nelson on July 31st, and the army was cut off from their base and deprived of supplies and reinforcements. But the great French General was nothing daunted by this misfortune. "This is the moment," he said,

when characters of a superior order assert themselves," adding, on another occasion, "The English will compel us to do greater things than we intended." Thus isolated, he would march towards the rising sun and would return from a tour of Eastern conquests at the head of Eastern nations, and so march back through Central Asia on the footsteps of Alexander, through Vienna to Paris. He continued to consolidate and strengthen his position in Egypt. Desaix defeated Murad Ali's Mamlukes, and drove them into the desert. Attempts were made to conciliate the people. Some of the French, including General Menon, embraced the Musliman religion, while Bonaparte himself pronounced the creed of the Prophet in the tomb of Cheops, and he received from the natives recognition as El Kebir, the Exalted.

In the meantime the Turks, under Drézzu, were taking up a menacing position in Syria, for the Sublime Porte had taken the side of the enemies of France after the destruction of Brueys' fleet in Aboukir Bay. By the end of January the French army was ready for the expedition into Syria, which was headed by Kléber with 12,000 men, who advanced to El Arish, dispersing some Mamlukes on the way.

Bonaparte left Cairo on the 10th February, arriving on the 16th at El Arish, and forced that place to capitulate on the 20th. Advancing over country famous in the Scriptures and in the wars of the Crusades, the French General took Gaza on the 24th, and Jaffa on the 17th March, the latter falling by assault after ten days' siege. Two thousand of the garrison were killed and 2,000 taken prisoners, the latter being shot as they could not be supported with the army, and to release them would have been to augment the enemy's strength for resistance. Bonaparte has been subjected to much obloquy for this execution of prisoners, for which however there appear to have been sufficient military reasons. War to be effective, must be terrible, and so even humane methods in the conduct of operations which had destruction for their object, generally result eventually in greater loss of life. There can be no humane war except in the amelioration of peacemakers, whose object is to turn anything into a party cry for their own advantage. Napoleon Bonaparte was no less humane than other men, but he did not shrink from such life when it was necessary for the attainment of military requirements. With regard to the execution of the prisoners of Jaffa, it is interesting to quote the views of a late distinguished member of the German General Staff, Count Yorck von Wartenburg, who says: "In the eyes of merely didactic

historical writers, this deed may appear horrible and revolting, but practical military history must not consider it as such. The safety of one's own army, on which the possibility depends of ultimately gaining the victory, must outweigh all other considerations. If such an act is necessary for the safety of one's army, it is not only justified, but its repetition in any future war would be advisable, and no convention could alter this fact. In the exceptional circumstances of warfare, no other motto is permissible but this, *Salus publica summa lex*,.....Bonaparte possessed the strength of mind to be hard, and to look on men at certain times as mere counters; and this strength of mind a General must possess."

On March 17th, 1799, the French army encamped in the plain of Acre, a strongly fortified town, held by a Turkish army under Djezzar, and celebrated in the wars of the Crusades, when it had been held by the Knights of St. John for a hundred years. An English squadron, under Sir Sidney Smith, was in the offing, and opened fire on the French, who had no guns, as their siege artillery had been sent by sea from Alexandria. This the British Admiral guessed, as there was no reply to his fire, so he put to sea again, captured the French siege train, and utilised it for the defences of the town, which were placed in charge of an *émigré*, Phélippeaux, who had been at the Military School at Paris with Bonaparte. Under this able direction the garrison offered a stubborn resistance, and in the absence of artillery the valour of the assailants was futile. After a siege, that lasted sixty-two days, characterised by desperate assaults on the part of the besiegers and equally desperate sorties by the besieged, Bonaparte withdrew his forces with a loss of four thousand men. The one bright spot in the expedition was the defeat, near the foot of Mount Tabor, of a large Turkish army sent from Damascus to raise the siege of Acre. The retreat began on the night of the 20th May, and the 350 miles to Cairo were covered in 26 days, a remarkable performance considering the climate and nature of the country. Early in July a Turkish army, some twelve thousand strong, set sail from Rhodes, escorted by a British fleet, and landed on the Peninsula of Aboukir on the 20th July. Here the troops entrenched themselves strongly, hoping for the co-operation of Murad and his Mamelukes, who had been driven into the desert by Desaix, and had retreated as far as the third cataract on the Nile. But Murad was unable to advance beyond the Pyramids, where he died of plague on the scene of his first defeat. On July 25th Napoleon attacked the Turks with all his forces, and carried the entrenchments, driving the enemy into the sea, where all perished except about three thousand, who took refuge in a citadel at the head of the Peninsula. The victory was largely due to Murad's cavalry, which rode round the line of entrenchments and cut in upon the flank of the retreating Turks. On the 1st August, the anniversary of Nelson's victory in the battle of the Nile, the remainder of the Turkish army surrendered. Not a man had escaped of all the host which had landed only ten days before.

Bonaparte now decided to return to Europe with the prestige gained in the battle. His repulse before Acre had, for the time being, dissipated his dreams of Oriental Empire. He had been kept informed of events in France, where his presence was urgently required. He could hope for nothing by remaining in Egypt, between which and Europe stretched the expanse of the Mediterranean, where British ships were supreme. But in continental Europe, beyond the tideless sea, an ocean of events, fraught with the most dramatic happenings in the world's history, awaited the coming of the Man of Destiny. The hour had struck; "the pear was ripe," and on August the 22nd the General embarked near Alexandria and set sail for France. Although the failure of the Egyptian expedition had led to the temporary abandonment of his schemes of Oriental Empire, Napoleon Bonaparte did not cease to be attracted by the glamour of the East.

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For many years she seems to have been preparing for a war with Russia and her army and navy were undoubtedly in a state of great efficiency. Her system of intelligence was excellent, and was ubiquitous. By her alliance with England she had secured, as "Chasseur" puts it, "a Ringkeeper" and could proceed to handle whatever force Russia might bring against her.

At the end of January 1904, although Russia's suspicions had been sufficiently aroused to make her give orders for large consignments of tinned meats and stores, yet she was in no way ready for the war that Japan was preparing to bring against her. Everything in Japan was ready to the smallest detail and her navy and transports merely waiting for the propitious moment. The war may be said to have commenced when on the 6th February Admiral Togo sailed from Sasebo.

The first objective of the Japanese plan of campaign was Korea, and it is easy to see why. The theatre of war was to be Manchuria. To enable them to throw their armies into Manchuria the command of the sea was necessary to them. The task of obtaining this was given to Admiral Togo and it was essential for his offensive strategy that he should be able to utilise certain harbours in the north of Korea.

To prevent the Russians establishing a land supremacy in Korea which would control the harbours, the Japanese saw they must get there first.

They concluded then that they must first establish themselves in the capital of Korea, Seoul, or Pion in Ping Yang, as soon as possible. Ping Yang, as can be seen from its position, is the main strategic point in the north of the Peninsula, the possession of which was important to both sides.

Their preparations were all to one end, to seize the initiative without its attendant disadvantages, and so while Togo strained to

Port Arthur, Admiral Uriu with a cruiser squadron proceeded to the harbour of Chemulpho, and there on the 8th February, under the noses of three Russian vessels (a cruiser, a gunboat and a volunteer steamer), was landed a portion of the 2nd Division; while at the same time one company was landed at Haiju. This company was to move by forced marches to Ping Yang. Next morning Uriu challenged the Russians to come out and fight; they came out, but thought better of it, turned, and preferred to sink themselves and blow themselves up in the harbour. Meanwhile on the night of the 8th Togo had made his first attack at Port Arthur and paralysed the Russian fleet.

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All the rest of March the 1st Army was pushing on the invasion of Korea, and by the middle of April Togo felt he could once more move forward his base, which he did, to the Elliott Islands, and at the same time the coast defence squadron at Chinampo was able to move up to the mouth of the Yalu, and Kuroki had advanced to Ping Yang; by the end of April he was fully established on the south bank of the Yalu, while the 2nd Army under Oku, consisting of the 3rd, 4th and 1st Divisions, was waiting for the signal of the successful crossing to begin its appointed task.

"Chasseur" proceeds to show that it was on this movement of the 2nd Army that the Japanese main hope of success hung. It was destined to isolate Port Arthur, and it was consequently intimately connected with Togo's strategy. After isolating the great fortress its duty undoubtedly was to at once march north and frustrate any attempt to raise the investment; while the actual operations against Port Arthur from the land side were entrusted to another army.

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It is evident that the Japanese had their plans fully prepared to meet the case should they be successful; but they were not prepared for such a rapid breakdown of the Russian defence either in North Korea or on the sea at Port Arthur. Their 1st Army had crossed the Yalu and their 2nd Army had been ready to be conveyed to some point on the Liau Yang Peninsula, but the 3rd Army and the

4th Army with the siege train destined for Port Arthur were not ready.

However, on May 19th the 3rd Army under Nodzu, consisting of the 5th, 6th and another Division (probably 8th), landed at Takushan.

It was now they made the mistake which militated against their bringing the war to a more rapid and successful conclusion. The essence of the first phase of the plan of campaign was the rapid advance up the Lau Yang Peninsula of a force superior to anything the Russians could concentrate or organise in the time. But, as has been said, their successes had come too quickly, and they failed to rise to the occasion and alter their plan of action, by which I mean that when they saw that Nogi's army could not get to Port Arthur, whose siege it was destined to undertake, they should, surely, have sent Nodzu's army to Kerr Bay instead of Takushan, and thus have freed Oku for the northward march. However, they ordered Oku south to complete the cutting off of Port Arthur and to wait for Nogi's army, thereby adhering to the letter rather than to the spirit of their great plan, which now revealed itself.

Looking at the map we will see there are three roads from the sea converging northwards on Lau Yang (map at end).

On the right is the Mandarin road from Seoul to Peking, passing through Feng Whang-Cheng and the Motienling, the distance from Feng Whang-Cheng to Lau Yang being about 80 miles.

In the centre is the road from Takushan through Suycen, the distance from Takushan to Lau Yang being about 100 miles and north-east to Feng Whang-Cheng 50 miles.

On the left is the road almost parallel with the Port Arthur-Mukden Railway, the distance from Puhentien to Lau Yang being about 140 miles, and Pitswo to Takushan 70 miles.

At Feng Whang-Cheng was Kuroki's 1st Army (the 2nd, 12th, and Guards Divisions, 50,000 strong)

At Takushan was Nodzu's 4th Army (the 5th, 6th and 10th (?) Divisions, 50,000 strong)

At Port Adams was Oku's 2nd Army (the 1st, 3rd and 4th Divisions, 60,000 strong)

So that we have the Japanese army 160,000 strong covering a front of 120 miles on three roads converging on Lau Yang.

The Russian forces at this time were as follows:

At Port Arthur	35,000
On the Peking coast	25,000
Between the coast and Puhentien and northwards	25,000
Balance	50,000
Total	135,000

NOTE. As regards the 10th Division of Nogi's army of Port Arthur, which was called the 1st Army, as Nodzu's was styled the 4th, I have consequently referred to the numbering of the names of their commands in a way of confusion.

From the 90,000 "balance" stops had to be furnished for Motienling, Suiyen and Kairing, leaving about 30,000 for a field army.

In the great advance of the three Japanese armies Oku, on the left, was to operate on the fringe of the Liau Ho plain following the trend of the railway and more or less on the flat.

In the centre, Nodzu, before he advanced on the same front as Oku, had to traverse the underfeatures of the big mountainous mass. On the right, Kuroki's way was even more difficult—the mountains were higher and there were more of them. Opposite to him were two ranges, in the easternmost of which was the Motienling pass, and this was separated from the other by about six miles. Both ranges ran north and south, and between them was a great valley.

The climate of Southern Manchuria is extreme. In winter the country is icebound for four months, while the summer heat is dry and easily endured. Half the yearly rainfall of about 13 inches falls in July and August. When the country is icebound, the roads, bad at their best, are suitable for cart traffic; but when it rains or thaws they are impracticable. Under such conditions the question of transport must have taxed the ingenuity of both sides to the utmost. In the Japanese army each unit brought with it a certain number of light pony carts for obligatory transport, and a pony pack train for ammunition supply. Their main supplies were brought by locally hired cart trains plying between five sea bases and the front, while the advanced bases distributed it by means of brigade transport.

The Russian army made all the use that was possible of the railway, and for local distribution depended on local hire.

We will now look with "Chasseur" into Kuropatkin's position. We will not enter into the question "Whether Port Arthur was held against his advice or not?" but as it was to be held, what was his plan of campaign? First and foremost, to delay the Japanese in their advance—to keep them striking at his extremities until his energy had made a staff and the Siberian railway had given him an army. All his dispositions were to gain time. Sassulitch's force on the Yalu was merely a delaying force, and the garrison of Port Arthur became the same. This, then, was how he utilised Port Arthur. The series of entrenched positions along the railway and the Mandarin road were to the same end. But it was Port Arthur that proved the magnet to which his enemy clung. If only Oku had been freed at once he could have been at Tashichau before Kuropatkin had half completed the concentration of his 1st Army.

So the rapid advance to the Yalu and the unexpected successes both there and by the fleet before Port Arthur, which enabled the 2nd Army to be landed so soon on the Liau Yang Peninsula, were counterbalanced by the failure of the Japanese to see the tremendous importance of their real objective—Kuropatkin's army—owing to the fatal attraction of the fortress, which was surely a secondary objective.

Thus the Japanese by this mistake so far helped Kuropatkin in that they gave him time to equip a field army and push it down to

delay their main advance; and, further, his plans to delay the Japanese advance were so far successful that he was enabled to organise an army with which he felt he could meet them at Liau Yang; and though he was defeated there he was successful in withdrawing his army, so that instead of the decisive victory which the Japanese had hoped would terminate the war, it was prolonged for another year.

We must now return and see what actually happened after Nodzu landed at Takushan. Oku had been ordered to complete the isolation of Port Arthur, and to do this he fought the battle of Nanshan on the 27th May, with the result that the Russians were completely cut off from the Peninsula, but Oku was so weakened with his losses in men and ammunition that he was brought to a standstill, and it was not till the 13th June that he was able to start from Pulientien to meet the force under Stackelburg which had been sent down to help on Kuropatkin's delaying plan. Oku was in a position to do this then, only through the arrival of Nogi's 9th Division, so leaving his own 1st Division to co-operate with the 9th, and borrowing Nodzu's 5th Division, he started on his advance to the north.

Stackelburg had reached Tehlitz, and taken up a position with his force of 25,000 men on a circular line of hills across the railway, with both flanks vulnerable and his line of retreat such that it could be converted into a *cul de sac*. Oku's plans to annihilate this smaller force were well laid.

He sent one division round the Russian right and his cavalry brigade round their left, with orders to cut the Russian communications, while he attacked them in front with two divisions. He gained a decisive victory, which was chiefly due to the cavalry appearing on his right unexpectedly at a critical moment, but he failed to annihilate the enemy, as he might have done if the cavalry had obeyed his instructions and forced their way through the difficult hilly country round to the Russian rear. This took place on 15th June.

Oku seemed again exhausted, and covered only 50 miles during the month, but by the end of June Kuroki had obtained the Motienling pass and Nodzu had occupied the Fenchuiling.

The Japanese strategy, namely, the converging of the three armies on Liau Yang, was now perfectly obvious. Kuropatkin's hope of resuming the initiative with Stackelburg's force had ended disastrously, and his course now was to delay the advance from the south and foil the flank march from Korea by throwing a heavy force against Kuroki, and then, having dealt successfully with him, he would be free to deal with the main army from the south. Here was a case of Kuropatkin, working on interior lines, and hoping to defeat the Japanese, working on exterior lines, by operating against and defeating their armies in detail.

To go back to Kuropatkin's plan of delaying the main force from the south.

There are three ways of delaying a modern army—

First, by operating with mounted troops against its communications.

Second, by building field works and deceiving the enemy into the belief he will have to fight to win them, thereby causing him to deploy.

Third, by causing him to expend ammunition by a skilfully commanded rearguard.

Owing to the free harvest growth and the season of the year he was prevented from using the first, but he worked a combination of the other two.

Between Tehlitz and Liao Yang he had entrenched four positions. At Kaiping, Haicheng and Anshanchan he succeeded in hoodwinking the Japanese, and made them deploy and use a lot of ammunition; while at Tashichau he forced a battle in which on the first day the Japanese failed in their attack, and on the second day they were kept in check for a long time by a small rearguard of mounted troops. In this fight the Japanese attack on the first day failed through want of preparation by artillery, which, as a matter of fact, had stuck in the mud and been outstripped by the infantry. The occupation of Tashichau on the 25th June was of immense value to the Japanese because it gave them another sea base for the summer at Newchang.

On the arrival of Oku before Haicheng he was joined by Nodzu, and Marshal Oyama now took command of this combined main army. Here they halted from the 3rd August to the 23rd, their outposts being in touch with the Russians at Anshanchan.

Meanwhile on the right Kuroki had been preventing *Rennenkampf* from turning his extreme right by detaching his 12th Division. On the 31st July he attacked Count Keller, and after the battle of Towan pushed the Russians back, Count Keller being killed in the retreat. Kuroki now got into touch with the Japanese right. All three armies can now be treated as a whole under the command of Marshal Oyama. The final stage of the strategic move on Liao Yang had taken place, and the tactical phase had to be developed.

Kuropatkin had all this time been fortifying and entrenching his position round Liao Yang, whilst he was organising the army which was to hold it. For though he had hoped to delay the Japanese advance long enough to concentrate at Liao Yang a force that would enable him to take the initiative in superior numbers, yet in default, if the Japanese succeeded in concentrating before he was ready to strike, he would be able to receive the blow behind an entrenched position.

He had calculated on having the necessary striking force by the end of September, but, despite the great delay in the Japanese advance from the south, Oyama was ready a month earlier. Nevertheless Kuropatkin was confident in his entrenchments and prepared to receive the blow and eventually to counter.

Before we enter into the details of the great battle of Liao Yang let us leave "Chasseur's" study and look for a moment

ourselves at the strategic principles involved by the Japanese advance. Having settled that their primary objective was to be the Russian army somewhere in the vicinity of Liao Yang, it was but the natural sequel that they should advance on exterior lines with their army in three parts; for not only did it facilitate the supply question, but the three roads from the seaboard converging on Liao Yang lent themselves naturally to such an advance.

Now, the essence of the situation caused by the advance of the component parts of a large army on exterior lines is that they should support one another. Though the three parts were not in actual touch, yet it is evident that each part only took its next step forward when it knew it was its turn to do so; and finally on August 15th, when Kuroki got into touch with Nodzu on the line Motienling-Haicheng, concerted action under Marshal Oyama was ensured. Colonel James in his book "Modern Strategy" says there is no doubt that in future wars we shall see many more examples of this application of the principle of converging armies acting against a single force because of the crushing effect to be derived from the strategical envelopments. Again, the Japanese, having seized the initiative and taken the offensive, had, at the time when they commenced their advance in three armies from the seaboard, put themselves in a position where their lines of communication were behind them based on the sea, of which they had the command. Their front was perpendicular to their line of communications.

Where was the Russian line of communications? and how did the Japanese advance affect it?

As regards the Russian Field Army, its only line of communication was the line of railway through Liao Yang to the north, along which were situated the depots for supplying the forces in the hills to the east.

It will be seen from the map that the railway runs obliquely to the lines of advance of the right and centre Japanese armies, so that to meet them the Russians were compelled to face to a flank as regards their own line of communications. In addition to securing superior numbers at the point of collision, strategy aims at putting our army in such a position that we may be able to threaten the communications of the enemy while protecting our own; this is exactly the position the Japanese were in.

The three Japanese armies were now, at the beginning of August, covering a front of 50 or 60 miles, and on the left Oyama halted before Anshanchan to receive the reinforcements which brought his divisions up to war strength. The approximate numbers of the two armies fronting one another "Chasseur" puts down at—

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On the 25th August there was a general advance by the Japanese. On their left Anshanchan was evacuated by the

Russians, but on the right Kuroki was checked by Ivanoff (who had succeeded Keller) holding a strong position near Anping. Hearing, however, that Oku had reached Anshanchan, Kuroki knew it was imperative to drive in Ivanoff. He succeeded in doing this by a risky and desperate night attack, and Ivanoff withdrew over the Tangho. For some reason Kuroki never attempted to harass this withdrawal. Kuropatkin had calculated on this strong position keeping back Kuroki until he could deal with him in his own time, and its loss was a severe blow.

The Japanese were now in front of the Liau Yang positions.

The 1st position, seven miles from Liau Yang, was a range of low hills, heavily fortified with tiers of trenches, and every modern invention, running east and west from the railway on the west to the higher mountains on the east, where Kuroki was. Now that Ivanoff had been driven across the Tangho, the position was roughly as follows: The Russian left was at right angles to their right, forming two sides of a triangle, the base of which passed through Liau Yang and the apex penetrated into the mountains growing up from the Liau Ho plain. Oyama pressed his attack against the southern face while Kuroki was to turn the north angle (see map at end).

On August 30th, in order to carry out his part of the plan, Kuroki detached his 12th Division and sent it across the Taitse for the purpose of placing itself across the Russian communications. This river was rapid and deep, bridged in one place only, and was unfordable, except at one or two difficult places. Here was a surrounding movement taking place complicated by the operation having to be developed on both sides of a considerable obstacle. It can only be put down to the Russian General's incompetence that he allowed this solitary and unsupported division to effect the passage unopposed. Kuroki saw its danger and sent most of the 2nd Division after it. The flanking movement was now complete, but there two weak divisions were completely beyond the reach of help. In the surrounding movement on Ulm in 1805 when Murat, misunderstanding Napoleon's orders, allowed only one of Ney's divisions to remain on the left bank of the Danube it was promptly overwhelmed; again in 1805 Mortier's whole corps was overwhelmed in the defile of Durrenstein through being separated from the rest of the army by the Danube.

Mr. Fraser in his book on the war in Manchuria, remarking on this, says "it seems extraordinary that Oyama should have jeopardised such a considerable portion of his forces on an undertaking that lacked the essential elements of success; that it was taking a liberty regardless of consequences at a point where was the crux of the whole situation." It is a rule of war that, if you have an obstacle parallel to your line of operations, it is dangerous to advance on both sides of it, but nevertheless in all campaigns great Generals are found conducting operations apparently full of risk, and it is an easy matter to point out some obvious manœuvre on the part of the enemy which would have ruined

the whole operation. In this case perhaps we can give Oyama the credit of relying on the Russian incompetence and want of initiative. At all events, the crossing was attended with success in so far that the detached divisions were not overwhelmed, but the flank movement failed, for Kuroki found that the Russians still held very strong positions between him and Liau Yang. He dared not separate himself further from the main army by moving north, so he attacked the position. Meanwhile, on the 30th, Oku, on the left, attacked the Russian right after a big artillery preparation. He was driven back; he again failed that night, and again a third time before dawn on the 31st; a 4th and a 5th attack on the same day met with the same result. By this time Kuroki was beginning to feel the pressure of the reinforcements sent by Kuropatkin to Ivanoff, and to Oyama it looked as if Kuroki would be crushed for want of co-operation, though he never realised that Kuropatkin had really transferred his reserves to his left preparatory to covering the withdrawal of his army. Consequently on September 1st Oku made a final desperate assault only to find the Russians had gone! They had fallen back on a second position encircling the south-west approaches of the town. In reality these trenches were being held by a brigade under Grekoff, who had orders to hold them for 48 hours. So well did he conduct his rearguard action that he held them for 70 hours and three assaults on his position failed. Between the 31st of August and the 2nd of September Kuroki on the right flank had been fighting desperately for the position opposite him; on the night of September 3rd Grekoff retired, after repulsing yet another attack by Oku, through Liau Yang, leaving the force that up to now had kept off Kuroki to follow as a rearguard. On the 4th of September the Japanese Division occupied Liau Yang.

Though Kuropatkin had been defeated, he had saved his army practically intact, and though Oyama had beaten his enemy and had gained his position, yet he had failed to bring about the result which would save his country another year's war. The way in which Oyama butted against the Russian position frontally without also attempting to turn their right flank makes it appear as if he wanted to paralyse his enemy by the strength of his blows; for the Russian fortifications, judged as positions which might have been worked round, were marvellously weak, though in view of the nature of the Japanese attack, which was purely frontal, they were extraordinarily strong. Oyama no doubt hoped for more decisive results from Kuroki's turning movement which threatened the Russian rear and communications, but in that case it seems a pity he did not put more weight into it.

The battle, which may be said to have commenced on the day the position at Anshanchan was evacuated, had lasted 8 days, that is, from the 27th August to the 3rd September inclusive. The Russian casualties are put down at 18,000, while those of the Japanese amounted to 30,000.



**Final position 1st-3rd
held by GR**

**Russian position
27th August - 31st A**

**Triangle refers to R
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Photo-Mechl. and Litho.

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THE INFLUENCE OF ARMAMENT IN WARFARE.

BY BERNARD JOHNSTON, ESQ., D.S.P.

To the skill and prowess of the British bowman our victories against the French and Scots are generally ascribed rather than to superior strategy or the valour of the steel-clad knights. Now, why in the days of "shock tactics" and hand-to-hand fighting should a missile weapon have so frequently gained the day against heavy odds? The English long bow was a simple but formidable weapon, its extreme range about 400 yards, in this respect distinctly inferior to the cross bow although its rapidity of fire was much greater. To acquire low moderate skill in the use of the national weapon the most arduous practice was necessary, and none but those possessing exceptional physical strength and keen eyesight could hope to become experts. The cross bow was, from a mechanical point of view, an immense advance on the simple five feet or so of yew wood and cord, and to attain a moderate amount of skill in its use was no very difficult undertaking. We may safely conclude then that although the pick of the English bowmen were superior to the best of their opponents the average cross bowman was more likely to hit his enemy at medium and short ranges than the general run of the long bowmen. This being admitted we find the constant success of the English arms somewhat difficult to understand, for since the Homeric period battles have not been decided by individual effort or skill in weapons, and the arm which is most easily understood and most effectively used by the rank and file is certainly the most effective for fighting purposes. That the arbalast as a weapon was preferred by the average Englishman is proved to demonstration by the numerous Royal Edicts against its use, in spite of which it gradually but surely ousted the long bow; by the time of Elizabeth the cross bow seems to have almost entirely supplanted the older weapon in popular favour. The destruction of popular myths is ever an unpleasant task, but the truth seems to be that the reason of our long list of successes from the 12th to 15th centuries was not the wonderful effects of our arrow flights but the superior individual courage and physical capacity of our bowmen. The confidence of their leaders in the steadiness of their commands justified the adoption of the historic harrow formation—a formation which, while it gave free scope to each soldier for the use of his weapons, offered a difficult target to the archery of the enemy whose huddled masses even the unskilled among the English bowmen could easily hit, and when the ragged array of armed peasants opposing them fell into disorder the arrow sleet from the long bow must have been to the slow replies of the arbalast what the old Snider would be to the Lee-Enfield. Then as now it was not the weapon but the man behind it who scored. Let

us, in order to prove our argument, discuss briefly the campaigns and armament of the past two hundred years. The campaigns of Frederick the Great offer the first remarkable instance of the effect of superiority in weapons and training; at the battle of Oppeln when the Prussians were apparently hopelessly defeated the triumphant Austrians were not only checked but actually repulsed by the extraordinary vigour and precision of the Prussian musketry.

In this battle the advantages of the iron ramrod over the wooden loading stick which must have frequently broken and jammed were manifested. Although on the field of Oppeln old Fritz was saved by his infantry fire, no sane soldier would maintain that he depended mainly on this for success. The Great Prussian himself tells us that marching rather than shooting decides the fate of campaigns; his army, inherited from his father, was the most highly trained in Europe, and many a time the manœuvring capacity of the battalions made up for errors in strategy and even in tactics, and in the famous contest of Rossbach, Marshal Soubise was defeated not by the Prussian infantry fire but by the disciplined valour of the German cavalry, who enveloped the heads of his columns and threw them into confusion before they had time to take up their positions. Passing over the ferocious campaign in La Vendée, in which the Republicans were long baffled by the Royalist peasantry, formidable mainly by their mobility and knowledge of the exceedingly difficult country in which they fought, we will take the American War of Independence as perhaps the best example of popular misconception. To-day the man in the street is convinced, if on no better authority than that his father told him so, that we lost America because the American backwoodsman was better armed and a more skilful shot than the rank and file of the British Army; he says indeed that our Army was shot out of America. We propose to examine this hypothesis. At the outbreak of the struggle domestic politics were in a state of confusion, the Guelphs were but insecurely seated on the throne, Jacobite intrigue was rife, and the labouring classes were on the verge of starvation. Abroad we were engaged in a deadly contest with France. The Ministry was weak and divided, and the military forces at the disposal of the Government were at the lowest ebb as regards efficiency. So unpopular indeed was military service at this period that in order to fill the depleted ranks 4000 felons were actually released from the galleys. Commissions as field officers were bestowed on babies in the nursery, and a friendless man might remain a soldier till his days. In addition to these disadvantages the war was waged at a great distance from our shores, and although the rebels possessed no seagoing navy, at the time the British fleet never succeeded in driving the French navy off the seas, and the services rendered to Washington's cause by the French warships were simply invaluable. However, this is a digression, and we will return to the question of weapons. The regular line of both armies carried the flintlock smooth bore musket, but a few selected

American corps, such as Boone's Rifles, were armed with the famous "Kentucky Rifle." This weapon was admittedly infinitely superior in range and accuracy to the musket. It was long in the barrel and very small in the bore, from 28 to 32 gauge, for the backwoodsmen who used it were in the habit of carrying their own ammunition supply, which they were often unable to renew for months, and this alone necessitated a light bullet; the charge of powder employed was comparatively large, ensuring a flat trajectory up to about 150 yards. The weapons were fitted with a block backsight and a bead foresight. In the hands of experts this weapon often caused us terrible loss, particularly in officers, to whom special attention was paid, but, notwithstanding its superiority to the smooth bore, the fact remains that in general actions the musket almost always succeeded in driving the rifle off the field, and in a military sense we were driven out of the country, not by the valour or armament of our foes, but because we never had at any period of the war a force sufficient for the task confronting it. Popular sentiment anxious to account for our ill success ascribed it to the wonderful effects of the "Kentucky Rifle," and even now this fable is a stock belief; in reality Boone's Riflemen, although they annoyed us dreadfully, were too few in number seriously to influence the course of events.

The Napoleonic wars offer no instance of great results achieved by manifest superiority in armament, for French, British, Spanish, Prussian and Russian armies were very similarly equipped, the only point worthy of note being the way in which Napoleon, as he used up his veteran infantry, backed his raw levies with an increased proportion of guns, in this merely following the example of Frederick the Great.

The destruction of the Austrian armies by those of Prussia in the brief but furious struggle of 1866 is always cited as an instance of superiority of weapons deciding a campaign. The unfortunate Austrians were said to have been massacred wholesale at fabulous ranges by the murderous "needle-gun," the most skilful strategy and dexterous tactics availed nought against this fearsome weapon, one Prussian with his needle-gun was a match for ten Austrians with their antiquated muzzle-loaders, and so on *ad lib.* The needle-gun itself is now so much out of date that my readers will perhaps excuse a brief description of it. Invented and adopted by the Prussian army about 1854, it was a rifled arm of about 16 bore, heavy and very long in the barrel, the breech action was a clumsy forerunner of the present bolt action, the cartridge of soft paper was consumed by the explosion, and ignition was effected by the "needle" or striker, which being forced through the powder struck a patch of detonating composition spread on the base of a thick wad on which the bullet rested. It need scarcely be said that bent and broken strikers were a source of perpetual trouble to the German infantryman. The extreme range of this most faulty weapon was about 800 yards the accuracy very poor, the

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THE INFLUENCE OF ARMAMENT IN WARFARE.

recoil heavy, and the rate of fire only nine shots per minute. The escape of gas from the breech was so great that when the weapon became heated the soldiers frequently fired from the hip. The Austrians were armed with an excellent muzzle-loading rifle far superior in range and accuracy to the Prussian needle-gun, and but little if anything inferior to it in rapidity of fire. The perfect strategy of von Moltke, ably seconded by the abilities of von Roon, and other German Generals ensured the triumph of the Prussian armies when opposed by the gallant but incapable Benedek, who was, as he himself says, no strategist, and the Prussians would probably have been victorious had they carried duck guns in place of rifles; but on one occasion the famous "needle-gun" undoubtedly did prove more than a match for what was undeniably the superior arm. The battle of Königgratz was fought mostly over country covered with scrub jungle; the forces got to close range, and were much broken up, the fight in many instances resolving itself into combats between sections and individuals. In this hide-and-seek sort of combat the breech-loader, which could be loaded in the recumbent position without exposing the user, proved quite too good for the muzzle-loader, to load which it was necessary to kneel if not to stand. The fame of this battle spread over Europe, and the "heavy-headed" at once concluded that to the needle-gun, and the needle-gun only, was due the rout of the Emperor's legions.

Scarcely five years had elapsed before the Prussian armies were again on the move, this time against France. With the exception of the Bavarian Contingent, who were equipped with the Werder Rifle, the German infantry still carried the needle-gun. Meanwhile the continental powers had all adopted breech-loading weapons. France was provided with the Chassepôt—an arm possessing many bad qualities but immeasurably superior to the needle-gun. The Chassepôt was inaccurate, but had an effective range of over 2,000 yards and a rate of fire of 19 shots per minute, as compared with 800 yards and 9 shots per minute of the German musket. The worst faults of the Chassepôt were extremely heavy recoil, due to the large charge of powder and a wrong system of rifling, and escape of gas at the breech, a defect common to all the early breech-loaders.

To the musketry expert acquainted with the merits and defects of the rival weapons it seemed as if the Germans were hopelessly handicapped, and if the issue had been merely a question of infantry fire the result would have been a foregone conclusion. Observing that the German Staff proved equal to the occasion, thus saving their own French infantry from being punished at long ranges than their own they pushed their guns well to the front, the results more than justified the sacrifice; and again we see it clearly demonstrated that the batteries of course suffered terribly, but the sound organisation and capable leading, has never given victory in modern warfare. The complete defeat of the Serbian forces by the Bulgarians at

is another case in point; the Bulgars had merely an apology for a cavalry service; their artillery was scanty and the infantry arm, the old Kruka musket, was in all respects inferior to the Servian Berdan.

From the foregoing brief and very imperfect review of the wars and weapons of the past two centuries it is easy to deduce certain fundamental truths. We learn that although under favourable conditions a superiority of armament may decide an action or even influence the conduct of a campaign, it has never been able to contend successfully against sound organisation and competent leading. In brief, the man must always master the machine; wonderful as the Maxim gun and the sub-marine are, there is no limit to human ingenuity and no thrust without its parry, and this axiom true in the past will stand for the future.

As a nation we are warlike but not military; we take kindly to weapons but unkindly to restraint and discipline. Lord Roberts, who is not only a brilliant soldier but one endowed with the rare faculty of understanding his fellow-countrymen, evidently sees this when he urges us to go in for National Rifle Training as the one and only safe alternative for conscription, and if this training is to be of any use to us as a nation it must be thorough, systematic, and under the guidance of specially qualified instructors; it must in short form part of our national system of education. If any argument is necessary to ram this proposition home it is furnished by the returns of the killed and wounded in the Franco-German War. At the outset of the struggle the Teutonic armies were opposed by the trained veterans of Mexico and Solferino, who although outmanœuvred actually inflicted more loss on their foes than they themselves suffered. The capitulation of Bazaine at Metz saw the last of these gallant veterans sent captives into Germany. They were succeeded by Gambetta's hastily raised levies, with what result the following figures eloquently indicate:—

				Killed.	Died of wounds.
French	...	...	...	41,000	35,000
German	...	...	...	19,876	10,719

LANGUAGE EXAMINATIONS IN THE ARMY.

BY MAJOR E. MOLYNEUX, 12TH CAVALRY.

Not many months ago, England was very near indeed to war with a great European power. If war had come then, it would have found us far from being in an ideal state of preparation for it. The subject-matter of this article deals, it is true, with a matter of only a secondary degree of importance in our system, but it is one which could be put on a satisfactory footing with so very small an expenditure of trouble, and practically no expense, that it may be worth while to call attention to it.

All great military powers, ourselves included, attach importance to the acquisition, by at least some of their officers, of a thoroughly competent knowledge of the language of other powers with whom there is a likelihood that they may find themselves at war. The many occasions on which such knowledge is of practical value during the course of hostilities are so obvious and so fully acknowledged that it is unnecessary to do more than mention the fact: our own Government annually expends considerable sums in rewards to officers for passing examinations in various foreign languages, and these rewards are calculated on a fairly generous scale. The question which I propose to consider is this:—Do we make use of a system calculated to ensure a supply of officers whose linguistic attainments would be of the greatest possible value in time of war?

It we examine the system a little, it will soon be evident that such is not the case, and that our system is far behind that of other up-to-date powers in the results obtained. Our system is simply this:—A certain number of officers pass the prescribed examination each year, return to their respective duties, and Government, having duly paid over the sum prescribed, hall-marks them as “interpreters,” to be returned to store and used when required. But Government, in thus washing its hands of the matter, adopts a method which it would be the first to admit would be ridiculous to apply to any other article of store. If Government were to rest satisfied with accumulating all the material necessary for a campaign—food, forage, telegraph plant, ammunition, and the rest—and then chuck the lot, once passed, into its stores and godowns, and not give the matter a further thought, and expect to obtain the best results, ten or fifteen years later, when rot and rust had done their work on their forgotten war stores, what could we hope for from such methods but utter disaster? As a matter of fact, Government does nothing of the kind; every article of store or equipment is incessantly overhauled and its proper working condition verified, with the exception of the capacity of an officer to use a language in which he had passed an examination possibly ten or fifteen years previously, and which

years of neglect have made practically useless to him, for anything that Government would seem to know or care.

Does a language, once thoroughly learnt, become forgotten in time? With the great majority of men it undoubtedly does so, or at best is only a rusty instrument where a sharp and serviceable one is required. Let any man of twelve or fifteen years' service consider how much he remembers of the Latin, Greek, and French languages over which so many years were spent at school, provided he has had no opportunity of using them since. When I was a boy I had some aptitude for Greek, and special attention was given to it. I could write Greek verses with facility. A page of Homer and an Egyptian obelisk would now be equally incomprehensible to me: and I am sure that such is the experience of most. If this be the case with a language over which many years were spent, is it not reasonable to suppose that a language would be even more rapidly forgotten to which a single year or possibly less had been devoted? In the case of the dead languages it does not matter: they are mere mental gymnastics, and are acquired for educational purposes only. But the languages for which Government grants rewards are on a wholly different footing: they may be wanted at any time, without opportunity being available to re-study them. Yet there is no guarantee that they are not in the same condition; on the contrary, there is every reason to suppose that, failing any inducement to keep up such knowledge, the language will receive small attention amidst the ever-increasing pressure of regimental work. This is more especially the case as the examination (I speak from my own experience of the Russian examination more particularly) is for some reason wholly literary and academic in character, a practical conversational acquaintance with the language counting for very little—a defect which these examinations share with the vernacular examinations in India, where the candidate is examined upon his acquaintance with obsolete or classical books rather than on his power of making himself understood. We are vastly amused to hear of this system—a little exaggerated, perhaps—amongst the Chinese.

Is there any alternative system which would give better results? The Germans have evolved an excellent one. On their French and Russian frontiers officers are encouraged to master the language spoken across the nearest frontier. But their Government, with true German thoroughness, is not satisfied to let matters slide, once the necessary examination is passed. Instead of a reward in bulk, a regular allowance is made to those who pass; but its retention is made dependent upon the officer again satisfying the examiners at periodical examinations (I think it is every five years) "Lest he forget."

I cannot help thinking that this method is superior to our own. In the case of languages for interpretership, in which £200 is paid, would it not be preferable to pay, say, £100 on first passing as interpreter, the other £100 being kept back as "deferred pay,"

to be paid, £50 at a time, at each of two five-yearly subsequent examinations? It might be asking too much to require an officer to pass as "interpreter" each time unless he were allowed to re-visit the country; but it would not be unreasonable to require him to take a simple "pass."

I do not think that a change such as above suggested would involve much trouble or expense, nor would it probably affect the supply of candidates; but it would certainly ensure that languages, once learnt, were to a certain extent kept up. The system recently adopted in England is a step in the right direction. Under the English regulation an "interpreter" is given £125 on qualifying, and a second sum of £75 on re-examination. To my mind the £200 thus expended might with advantage be spread over the longer period suggested in this article, thereby doubling the period during which an officer is expected to keep himself proficient in the language. The additional chances of obtaining Active Service, as well as the pecuniary inducement offered, would probably prove sufficient to make him wish to keep his name on the interpreter's list as long as possible. If such a rule were brought in for the Indian and the Home services alike, the language question would be found to be on a far more satisfactory basis than it is at present.

PAYMENT BY RESULTS IN THE NATIVE INFANTRY.

By CAPTAIN E. KIRKPATRICK, 59TH SCINDE RIFLES, F. F.

No move has so far been made to pay the native soldier according to his individual efficiency. Yet no one will hesitate to say that the native soldier would be particularly responsive to an appeal for an effort towards self-improvement, if that appeal were backed by the powerful incentive of self-interest in the shape of an attainable increase of pay.

The native soldier, it is true, joins the service with distinct ideas of its being an honourable calling, suitable for a man born of a fighting race, but he also has an equally distinct intention of making his profession of arms support him until the time when he sees there is room for him at home, and need of his services in tilling the family acres.

About twelve years ago the pay of the sepoy was increased by two rupees, a very substantial rise on a monthly income of seven rupees. Since then no further general increase of pay has been given, until this year, when an addition of ten rupees has been made to the money allowed to recruits on joining for the purpose of buying their uniform. But with a rising standard of wages throughout the country the need for a further increase of pay may have to be faced, and, if decided on, would present an opportunity, not to be missed, for the trial of a system of paying zealous servants at better rates than the less profitable.

The desirability of such an attempt being allowed, the problem of the method of conducting it demands our attention. In the days of close order tactics, soldiers paraded and fought under the close supervision of their officers. The conditions of each man's performance were uniform. A few men were chosen for Light Infantry, and when organised in separate bodies their *esprit de corps* usually elicited effort. To-day each man is a skirmisher, his value as a soldier depending, apart from musketry, on his skill in fighting as a skirmisher. But if we try to devise a way by which each man shall be paid according to his skill as a skirmisher, we shall find difficulties so great as to make the idea impracticable. Firstly, to give each man a fair chance of showing his capabilities would take more time than can be spared from instruction, and if a fair trial under several conditions were not given, a certain number of men would be left who considered themselves ill-treated. Again, it would be quite impossible to provide a different bit of ground as a field for each man to prove his capabilities on, so that the last men examined would plainly have an advantage over those whose turn came first. Personal predilections, too, might not always be ignored. Officers in the position of judges might allow themselves to be influenced by the

the whole operation. In this case perhaps we can give Oyama the credit of relying on the Russian incompetence and want of initiative. At all events, the crossing was attended with success in so far that the detached divisions were not overwhelmed, but the flank movement failed, for Kuroki found that the Russians still held very strong positions between him and Liau Yang. He dared not separate himself further from the main army by moving north, so he attacked the position. Meanwhile, on the 30th, Oku, on the left, attacked the Russian right after a big artillery preparation. He was driven back; he again failed that night, and again a third time before dawn on the 31st; a 4th and a 5th attack on the same day met with the same result. By this time Kuroki was beginning to feel the pressure of the reinforcements sent by Kuropatkin to Ivanoff, and to Oyama it looked as if Kuroki would be crushed for want of co-operation, though he never realised that Kuropatkin had really transferred his reserves to his left preparatory to covering the withdrawal of his army. Consequently on September 1st Oku made a final desperate assault only to find the Russians had gone! They had fallen back on a second position encircling the south-west approaches of the town. In reality these trenches were being held by a brigade under Grekoff, who had orders to hold them for 48 hours. So well did he conduct his rearguard action that he held them for 70 hours and three assaults on his position failed. Between the 31st of August and the 2nd of September Kuroki on the right flank had been fighting desperately for the position opposite him; on the night of September 3rd Grekoff retired, after repulsing yet another attack by Oku, through Liau Yang, leaving the force that up to now had kept off Kuroki to follow as a rearguard. On the 4th of September the Japanese Division occupied Liau Yang.

Though Kuropatkin had been defeated, he had saved his army practically intact, and though Oyama had beaten his enemy and had gained his position, yet he had failed to bring about the result which would save his country another year's war. The way in which Oyama butted against the Russian position frontally without also attempting to turn their right flank makes it appear as if he wanted to paralyse his enemy by the strength of his blows; for the Russian fortifications, judged as positions which might have been worked round, were marvellously weak, though in view of the nature of the Japanese attack, which was purely frontal, they were extraordinarily strong. Oyama no doubt hoped for more decisive results from Kuroki's turning movement which threatened the Russian rear and communications, but in that case it seems a pity he did not put more weight into it.

The battle, which may be said to have commenced on the day the position at Anshanchan was evacuated, had lasted 8 days, that is, from the 27th August to the 3rd September inclusive. The Russian casualties are put down at 18,000, while those of the Japanese amounted to 30,000.



Final position 1st-3
held by GR

Russian position
27th August - 31st A

Triangle refers to R
facing S. and E.
OYAMA attacks Sou
KUROKI tries to get



Photo-Mechl. and Litho.

MAP SHOWING LINES OF THE THREE JAPANESE ARMIES.

APPROXIMATE SCALE.

0 20 30 40 50 Miles.

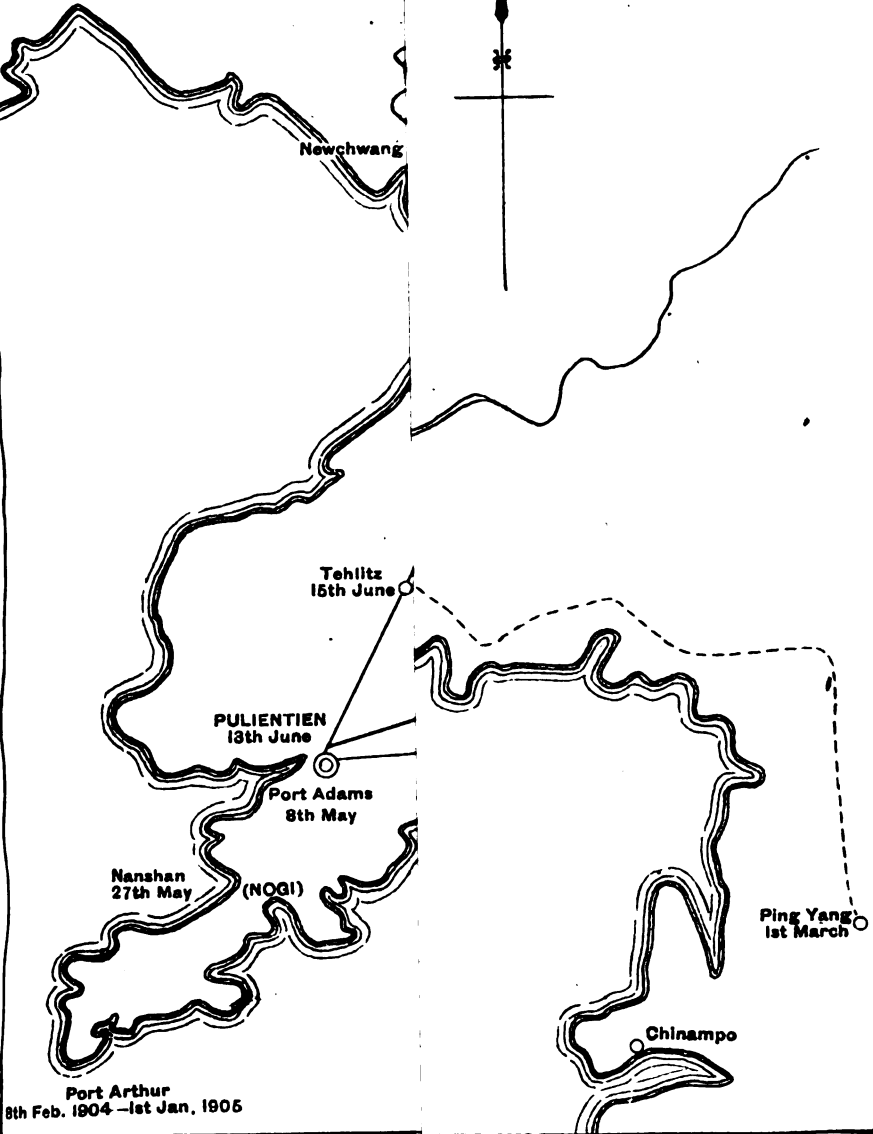
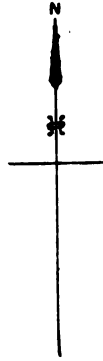


Photo-Mechl. and Litho. Dept., Thomason College, Bo

Zinco, November, 1905—No. 1125-2050

THE INFLUENCE OF ARMAMENT IN WARFARE.

BY BERNARD JOHNSTON, ESQ., D.S.P.

To the skill and prowess of the British bowman our victories against the French and Scots are generally ascribed rather than to superior strategy or the valour of the steel-clad knights. Now, why in the days of "shock tactics" and hand-to-hand fighting should a missile weapon have so frequently gained the day against heavy odds? The English long bow was a simple but formidable weapon, its extreme range about 400 yards, in this respect distinctly inferior to the cross bow although its rapidity of fire was much greater. To acquire low moderate skill in the use of the national weapon the most arduous practice was necessary, and none but those possessing exceptional physical strength and keen eyesight could hope to become experts. The cross bow was, from a mechanical point of view, an immense advance on the simple five feet or so of yew wood and cord, and to attain a moderate amount of skill in its use was no very difficult undertaking. We may safely conclude then that although the pick of the English bowmen were superior to the best of their opponents the average cross bowman was more likely to hit his enemy at medium and short ranges than the general run of the long bowmen. This being admitted we find the constant success of the English arms somewhat difficult to understand, for since the Homeric period battles have not been decided by individual effort or skill in weapons, and the arm which is most easily understood and most effectively used by the rank and file is certainly the most effective for fighting purposes. That the arbalest as a weapon was preferred by the average Englishman is proved to demonstration by the numerous Royal Edicts against its use, in spite of which it gradually but surely ousted the long bow; by the time of Elizabeth the cross bow seems to have almost entirely supplanted the older weapon in popular favour. The destruction of popular myths is ever an unpleasant task, but the truth seems to be that the reason of our long list of successes from the 12th to 15th centuries was not the wonderful effects of our arrow flights but the superior individual courage and physical capacity of our bowmen. The confidence of their leaders in the steadiness of their commands justified the adoption of the historic harrow formation—a formation which, while it gave free scope to each soldier for the use of his weapons, offered a difficult target to the archery of the enemy whose huddled masses even the unskilled among the English bowmen could easily hit, and when the ragged array of armed peasants opposing them fell into disorder the arrow sleet from the long bow must have been to the slow replies of the arbalest what the old Snider would be to the Lee-Enfield. Then as now it was not the weapon but the man behind it who scored. Let

us, in order to prove our argument, discuss briefly the campaigns and armament of the past two hundred years. The campaigns of Frederick the Great offer the first remarkable instance of the effect of superiority in weapons and training; at the battle of Oppelu when the Prussians were apparently hopelessly defeated the triumphant Austrians were not only checked but actually repulsed by the extraordinary vigour and precision of the Prussian musketry.

In this battle the advantages of the iron ramrod over the wooden loading stick which must have frequently broken and jammed were manifested. Although on the field of Oppelu old Fritz was saved by his infantry fire, no sane soldier would maintain that he depended mainly on this for success. The Great Prussian himself tells us that marching rather than shooting decides the fate of campaigns; his army, inherited from his father, was the most highly trained in Europe, and many a time the manœuvring capacity of the battalions made up for errors in strategy and even in tactics, and in the famous contest of Rossbach, Marshal Sowbesi was defeated not by the Prussian infantry fire but by the disciplined valour of the German cavalry, who enveloped the heads of his columns and threw them into confusion before they had time to take up their positions. Passing over the ferocious campaign in La Vendée, in which the Republicans were long baffled by the Royalist peasantry, formidable mainly by their mobility and knowledge of the exceedingly difficult country in which they fought, we will take the American War of Independence as perhaps the best example of popular misconception. To-day the man in the street is convinced, if on no better authority than that his father told him so, that we lost America because the American backwoodsman was better armed and a more skilful shot than the rank and file of the British Army; he says indeed that our Army was shot out of America. We propose to examine this hypothesis. At the outbreak of the struggle domestic politics were in a state of confusion, the Guelphs were but insecurely seated on the throne, Jacobite intrigue was rife, and the labouring classes were on the verge of starvation. Abroad we were engaged in a deadly contest with France. The Ministry was weak and divided, and the military forces at the disposal of the Government were at the lowest ebb as regards efficiency. So unpopular indeed was military service at this period that in order to fill the depleted ranks 4,000 felons were actually released from the jails. Commissions as field officers were bestowed on babes in the nursery, and a friendless man might remain a subaltern all his days. In addition to these disadvantages the war was waged at a great distance from our shores, and although the rebels possessed no seagoing navy at the time, the British fleets never succeeded in driving the French navy off the seas, and the services rendered to Washington's cause by the French warships were simply invaluable. However, this is a digression, and we will return to the question of weapons. The regular line of both armies carried the flintlock smooth-bore musket, but a few selected

American corps, such as Boone's Rifles, were armed with the famous "Kentucky Rifle." This weapon was admittedly infinitely superior in range and accuracy to the musket. It was long in the barrel and very small in the bore, from 28 to 32 gauge, for the backwoodsmen who used it were in the habit of carrying their own ammunition supply, which they were often unable to renew for months, and this alone necessitated a light bullet; the charge of powder employed was comparatively large, ensuring a flat trajectory up to about 150 yards. The weapons were fitted with a block backsight and a bead foresight. In the hands of experts this weapon often caused us terrible loss, particularly in officers, to whom special attention was paid, but, notwithstanding its superiority to the smooth bore, the fact remains that in general actions the musket almost always succeeded in driving the rifle off the field, and in a military sense we were driven out of the country, not by the valour or armament of our foes, but because we never had at any period of the war a force sufficient for the task confronting it. Popular sentiment anxious to account for our ill success ascribed it to the wonderful effects of the "Kentucky Rifle," and even now this fable is a stock belief; in reality Boone's Riflemen, although they annoyed us dreadfully, were too few in number seriously to influence the course of events.

The Napoleonic wars offer no instance of great results achieved by manifest superiority in armament, for French, British, Spanish, Prussian and Russian armies were very similarly equipped, the only point worthy of note being the way in which Napoleon, as he used up his veteran infantry, backed his raw levies with an increased proportion of guns, in this merely following the example of Frederick the Great.

The destruction of the Austrian armies by those of Prussia in the brief but furious struggle of 1866 is always cited as an instance of superiority of weapons deciding a campaign. The unfortunate Austrians were said to have been massacred wholesale at fabulous ranges by the murderous "needlegun," the most skilful strategy and dexterous tactics availed nought against this fearsome weapon, one Prussian with his needlegun was a match for ten Austrians with their antiquated muzzle-loaders, and so on *ad lib.* The needlegun itself is now so much out of date that my readers will perhaps excuse a brief description of it. Invented and adopted by the Prussian army about 1854, it was a rifled arm of about 16 bore, heavy and very long in the barrel, the breech action was a clumsy forerunner of the present bolt action, the cartridge of soft paper was consumed by the explosion, and ignition was effected by the "needle" or striker, which being forced through the powder struck a patch of detonating composition spread on the base of a thick wad on which the bullet rested. It need scarcely be said that bent and broken strikers were a source of perpetual trouble to the German infantryman. The extreme range of this most faulty weapon was about 800 yards the accuracy very poor, the

recoil heavy, and the rate of fire only nine shots per minute. The escape of gas from the breech was so great that when the weapon became heated the soldiers frequently fired from the hip. The Austrians were armed with an excellent muzzle-loading rifle far superior in range and accuracy to the Prussian needlegun, and but little if anything inferior to it in rapidity of fire. The perfect strategy of von Moltke, ably seconded by the abilities of von Roon, and other German Generals ensured the triumph of the Prussian armies when opposed by the gallant but incapable Benedek, who was, as he himself says, no strategist, and the Prussians would probably have been victorious had they carried duck guns in place of rifles; but on one occasion the famous "needlegun" undoubtedly did prove more than a match for what was undeniably the superior arm. The battle of Königgratz was fought mostly over country covered with scrub jungle; the forces got to close range and were much broken up, the fight in many instances resolving itself into combats between sections and individuals. In this hide-and-seek sort of combat the breech-loader, which could be loaded in the recumbent position without exposing the user, proved quite too good for the muzzle-loader, to load which it was necessary to kneel if not to stand. The fame of this battle spread over Europe, and the "heavy-headed" at once concluded that to the needlegun, and the needlegun only, was due the rout of the Emperor's legions.

Scarcely five years had elapsed before the Prussian armies were again on the move, this time against France. With the exception of the Bavarian Contingent, who were equipped with the Werder Rifle, the German infantry still carried the needlegun. Meanwhile the continental powers had all adopted breech-loading weapons. France was provided with the Chassepôt—an arm possessing many bad qualities but immeasurably superior to the needlegun. The Chassepôt was inaccurate, but had an effective range of over 2,000 yards and a rate of fire of 19 shots per minute, as compared with 800 yards and 9 shots per minute of the German musket. The worst faults of the Chassepôt were extremely heavy recoil, due to the large charge of powder and a wrong system of rifling, and escape of gas at the breech, a defect common to all the early breech-loaders.

To the musketry expert acquainted with the merits and defects of the rival weapons it seemed as if the Germans were hopelessly handicapped, and if the issue had been merely a question of infantry fire the result would have been a foregone conclusion, but once again the German Staff proved equal to the occasion. Observing that the French infantry fire was far more punishing at long ranges than their own they pushed their guns well to the front, thus saving their own infantry until they could get on something like terms with their foes. The batteries of course suffered terribly, but the results more than justified the sacrifice; and again we see it clearly demonstrated that superiority in armament, unless associated with sound organisation and capable leading, has never given victory in civilised warfare. The complete defeat of the Servian forces by the Bulgarian armies

is another case in point; the Bulgars had merely an apology for a cavalry service; their artillery was scanty and the infantry arm, the old Kruka musket, was in all respects inferior to the Servian Berdan.

From the foregoing brief and very imperfect review of the wars and weapons of the past two centuries it is easy to deduce certain fundamental truths. We learn that although under favourable conditions a superiority of armament may decide an action or even influence the conduct of a campaign, it has never been able to contend successfully against sound organisation and competent leading. In brief, the man must always master the machine; wonderful as the Maxim gun and the sub-marine are, there is no limit to human ingenuity and no thrust without its parry, and this axiom true in the past will stand for the future.

As a nation we are warlike but not military; we take kindly to weapons but unkindly to restraint and discipline. Lord Roberts, who is not only a brilliant soldier but one endowed with the rare faculty of understanding his fellow-countrymen, evidently sees this when he urges us to go in for National Rifle Training as the one and only safe alternative for conscription, and if this training is to be of any use to us as a nation it must be thorough, systematic, and under the guidance of specially qualified instructors; it must in short form part of our national system of education. If any argument is necessary to ram this proposition home it is furnished by the returns of the killed and wounded in the Franco-German War. At the outset of the struggle the Teutonic armies were opposed by the trained veterans of Mexico and Solferino, who although outmanœuvred actually inflicted more loss on their foes than they themselves suffered. The capitulation of Bazaine at Metz saw the last of these gallant veterans sent captives into Germany. They were succeeded by Gambetta's hastily raised levies, with what result the following figures eloquently indicate:—

				Killed.	Died of wounds.
French	...	...	...	41,000	35,000
German	...	...	...	19,876	10,719

LANGUAGE EXAMINATIONS IN THE ARMY.

BY MAJOR E. MOLYNEUX, 12TH CAVALRY.

Not many months ago, England was very near indeed to war with a great European power. If war had come then, it would have found us far from being in an ideal state of preparation for it. The subject-matter of this article deals, it is true, with a matter of only a secondary degree of importance in our system, but it is one which could be put on a satisfactory footing with so very small an expenditure of trouble, and practically no expense, that it may be worth while to call attention to it.

All great military powers, ourselves included, attach importance to the acquisition, by at least some of their officers, of a thoroughly competent knowledge of the language of other powers with whom there is a likelihood that they may find themselves at war. The many occasions on which such knowledge is of practical value during the course of hostilities are so obvious and so fully acknowledged that it is unnecessary to do more than mention the fact: our own Government annually expends considerable sums in rewards to officers for passing examinations in various foreign languages, and these rewards are calculated on a fairly generous scale. The question which I propose to consider is this:—Do we make use of a system calculated to ensure a supply of officers whose linguistic attainments would be of the greatest possible value in time of war?

If we examine the system a little, it will soon be evident that such is not the case, and that our system is far behind that of other up-to-date powers in the results obtained. Our system is simply this:—A certain number of officers pass the prescribed examination each year, return to their respective duties, and Government, having duly paid over the sum prescribed, hall-marks them as “interpreters,” to be returned to store and used when required. But Government, in thus washing its hands of the matter, adopts a method which it would be the first to admit would be ridiculous to apply to any other article of store. If Government were to rest satisfied with accumulating all the material necessary for a campaign—food, forage, telegraph plant, ammunition, and the rest—and then chuck the lot, once passed, into its stores and godowns, and not give the matter a further thought, and expect to obtain the best results, ten or fifteen years later, when rot and rust had done their work on their forgotten war stores, what could we hope for from such methods but utter disaster? As a matter of fact, Government does nothing of the kind; every article of store or equipment is incessantly overhauled and its proper working condition verified, with the exception of the capacity of an officer to use a language in which he had passed an examination possibly ten or fifteen years previously, and which

years of neglect have made practically useless to him, for anything that Government would seem to know or care.

Does a language, once thoroughly learnt, become forgotten in time? With the great majority of men it undoubtedly does so, or at best is only a rusty instrument where a sharp and serviceable one is required. Let any man of twelve or fifteen years' service consider how much he remembers of the Latin, Greek, and French languages over which so many years were spent at school, provided he has had no opportunity of using them since. When I was a boy I had some aptitude for Greek, and special attention was given to it. I could write Greek verses with facility. A page of Homer and an Egyptian obelisk would now be equally incomprehensible to me: and I am sure that such is the experience of most. If this be the case with a language over which many years were spent, is it not reasonable to suppose that a language would be even more rapidly forgotten to which a single year or possibly less had been devoted? In the case of the dead languages it does not matter: they are mere mental gymnastics, and are acquired for educational purposes only. But the languages for which Government grants rewards are on a wholly different footing: they may be wanted at any time, without opportunity being available to re-study them. Yet there is no guarantee that they are not in the same condition; on the contrary, there is every reason to suppose that, failing any inducement to keep up such knowledge, the language will receive small attention amidst the ever-increasing pressure of regimental work. This is more especially the case as the examination (I speak from my own experience of the Russian examination more particularly) is for some reason wholly literary and academic in character, a practical conversational acquaintance with the language counting for very little—a defect which these examinations share with the vernacular examinations in India, where the candidate is examined upon his acquaintance with obsolete or classical books rather than on his power of making himself understood. We are vastly amused to hear of this system—a little exaggerated, perhaps—amongst the Chinese.

Is there any alternative system which would give better results? The Germans have evolved an excellent one. On their French and Russian frontiers officers are encouraged to master the language spoken across the nearest frontier. But their Government, with true German thoroughness, is not satisfied to let matters slide, once the necessary examination is passed. Instead of a reward in bulk, a regular allowance is made to those who pass; but its retention is made dependent upon the officer again satisfying the examiners at periodical examinations (I think it is every five years) "Lest he forget."

I cannot help thinking that this method is superior to our own. In the case of languages for interpretership, in which £200 is paid, would it not be preferable to pay, say, £100 on first passing as interpreter, the other £100 being kept back as "deferred pay."

to be paid, £50 at a time, at each of two five-yearly subsequent examinations? It might be asking too much to require an officer to pass as 'interpreter' each time unless he were allowed to re-visit the country; but it would not be unreasonable to require him to take a simple "pass."

I do not think that a change such as above suggested would involve much trouble or expense, nor would it probably affect the supply of candidates; but it would certainly ensure that languages, once learnt, were to a certain extent kept up. The system recently adopted in England is a step in the right direction. Under the English regulation an "interpreter" is given £125 on qualifying, and a second sum of £75 on re-examination. To my mind the £200 thus expended might with advantage be spread over the longer period suggested in this article, thereby doubling the period during which an officer is expected to keep himself proficient in the language. The additional chances of obtaining Active Service, as well as the pecuniary inducement offered, would probably prove sufficient to make him wish to keep his name on the interpreter's list as long as possible. If such a rule were brought in for the Indian and the Home services alike, the language question would be found to be on a far more satisfactory basis than it is at present.

PAYMENT BY RESULTS IN THE NATIVE INFANTRY.

BY CAPTAIN E. KIRKPATRICK, 59TH SCINDE RIFLES, F. F.

No move has so far been made to pay the native soldier according to his individual efficiency. Yet no one will hesitate to say that the native soldier would be particularly responsive to an appeal for an effort towards self-improvement, if that appeal were backed by the powerful incentive of self-interest in the shape of an attainable increase of pay.

The native soldier, it is true, joins the service with distinct ideas of its being an honourable calling, suitable for a man born of a fighting race, but he also has an equally distinct intention of making his profession of arms support him until the time when he sees there is room for him at home, and need of his services in tilling the family acres.

About twelve years ago the pay of the sepoy was increased by two rupees, a very substantial rise on a monthly income of seven rupees. Since then no further general increase of pay has been given, until this year, when an addition of ten rupees has been made to the money allowed to recruits on joining for the purpose of buying their uniform. But with a rising standard of wages throughout the country the need for a further increase of pay may have to be faced, and, if decided on, would present an opportunity, not to be missed, for the trial of a system of paying zealous servants at better rates than the less profitable.

The desirability of such an attempt being allowed, the problem of the method of conducting it demands our attention. In the days of close order tactics, soldiers paraded and fought under the close supervision of their officers. The conditions of each man's performance were uniform. A few men were chosen for Light Infantry, and when organised in separate bodies their *esprit de corps* usually elicited effort. To-day each man is a skirmisher, his value as a soldier depending, apart from musketry, on his skill in fighting as a skirmisher. But if we try to devise a way by which each man shall be paid according to his skill as a skirmisher, we shall find difficulties so great as to make the idea impracticable. Firstly, to give each man a fair chance of showing his capabilities would take more time than can be spared from instruction, and if a fair trial under several conditions were not given, a certain number of men would be left who considered themselves ill-treated. Again, it would be quite impossible to provide a different bit of ground as a field for each man to prove his capabilities on, so that the last men examined would plainly have an advantage over those whose turn came first. Personal predilections, too, might not always be ignored. Officers in the position of judges might allow themselves to be influenced by the

knowledge of other qualifications, moral or physical, possessed by a candidate to the extent of passing, as qualified skirmishers, men who were not so in reality.

If there is no way of surmounting these difficulties, and it must be confessed that none is apparent, we must trust to obtain the best results by making instruction of interest, by sound discipline, and by thorough inspection, and turn our attention to musketry, the next essential branch of the Infantry soldier's art.

The present musketry course furnishes both a test for well-trained men, and an exercise for those whose training or skill is deficient, and these are sent back for further instruction and practice until qualified. The course is a great improvement on former courses, which were of the nature of a test only. It is the intention that men should be kept in constant practice by distributing the firing of the course throughout the year. The greater part of the tabulated course has of necessity to be fired during the six months of the summer, the cold weather being more suitable for field practices, and training in manœuvre of large and small bodies. The musketry training of the men during the part of the year when they are not performing or preparing for the annual course consists of the field practices, musketry exercise parades, fire control and fire discipline drills, and the constant use both in close and extended order of the rifle, with or without blank cartridge. No man can say that he has not ample opportunity of learning to use his arm on parade. On all parades fire is constantly opened, and the soldier then loads, aims, or appears to do so, and fires. Any one who has personally practised aiming and snapping for some days before shooting knows what extreme accuracy can be attained by this means alone without firing a shot, provided each snap is performed with the same care as when firing at a bull's-eye.

Yet the soldier, in spite of all the practice he gets, requires to go through a course of "position drill" before his annual course, and if called on to fire at other times, without previous special practice clearly shows that his skill has deteriorated in the interim and that his powers of really accurate shooting leave much to be desired. He is, in fact, not half good enough for the splendid weapon he carries.

The reason for this is not far to seek, and it is, that hardly a man when snapping at objects on parade pays proper attention to his aim. He does not shoot to hit. He may not knowingly shirk, but does not do his best. Such want of effort is due to lack of incentive to take the proper amount of trouble. It is not easily feasible for officers to see whether a man when snapping is really aiming or not (nor were it so, could officers and non-commissioned officers be sufficiently ubiquitous to watch all men), in addition to which there are many other points which claim attention on parade or at field work. Now, if the soldier could be driven or led to take pains with himself whenever he is called on to perform the acts of aiming and snapping and so get the full benefit of the immense amount of practice, available

for him, what a great difference it would make in the efficiency of the army. Each man of such an army would surely be worth three wholesale-trained conscripts. If, then, an increase of pay gave an opportunity for trying some system of payment by results in musketry, let us consider in what way we could attain the object of causing all men to put forth continuously their best efforts to maintain their shooting powers at the highest standard of excellence attainable by their physique and eyesight. In order to do this it is plain that men would have to be called on to prove their shooting powers at unexpected times, and so the tests would be held at irregular periods each year.

It would be advisable to give men access to their rifles freely, under supervision, so that those who felt the need of improvement should have the chance of extra practice in aiming and firing. The tests should be such as to take little time, for the working year is already filled by the programme for musketry and tactical training, and there is little time to spare. Conditions in the tests should be the same for all, that is to say, the range should be known so that men firing first should not be handicapped, calm days should be chosen, and, within corps at least, the state of the ground, wet or dry, should be the same for all, so that the strike of bullets should be invisible or visible to all alike.

Again, it would not be fair to judge a man's marksmanship from one day's shooting only, for the best shot may shoot badly on an "off" day. The test should consist in taking the average of shooting performed at two or three trials held at intervals sufficiently long to prevent indisposition on one occasion affecting a man on the next; indeed the longer the intervals, the more probability there would be that men would keep up their practice for that year.

The object would not be attained by testing men at short distances, for a man with shaky hands often manages to shoot well at short distances by a timely jerk of the trigger when he sees the foresight on the mark, but cannot shoot at longer range where higher class work is needed. Moreover, the range ought to be such as to demand an intelligent use of the backsight and a study by each man of the peculiarities of his rifle.

Lengthy aiming and hesitation in firing are out of place in a test of a soldier's shooting powers. A reasonable time to fire the rounds allotted should be given, and rounds not fired within this time should be forfeited.

Lastly, precautions would be needed against favour or affection, there should be no pulling in or out of targets, a British officer should count the hits and, till that was done, no one else should be allowed near the targets, and a British officer at the firing point should write each man's total at the time the hits were signalled, which would be done as soon as they were counted.

This may seem a lengthy list of requirements, but, given the ground, which is available at nearly all Indian stations, or, in default thereof, given the simultaneous use, for one day at a time of all the

ranges in a station, there will be found no difficulty in complying with them.

To economise time thirty or forty targets should be used, one for each man firing, set up as far apart as possible but arranged in groups of four or five for easy identification, the firers being told off in similar groups, each man opposite his own target.

The distance might be between 900 and 1,000 yards, 7 rounds allowed and 10 minutes to fire them in counting from the time when all the men firing had got into position and made themselves ready, thus allowing ample time for observation of strike and correction of sights. After each party of 30 or 40 men had fired, the British officer at the targets would count and signal the hits on each target, which would be entered at the time against the firer's name by the British officer at the firing point. The targets would then be pasted up, and a fresh party of men fire. In this way a whole battalion could easily be tested in one day, and the conditions for all in that battalion would be the same. The men's efficiency would be decided by the average hits made at three such tests. The target might be a three foot bull's-eye on a white ground, the latter being for visibility only, hits on the bull's-eye alone being counted.

Efficiency pay granted on the standard thus determined should be issued in sums of not less than one rupee per mensem for the lowest rate, and for the higher rates, if any, increments of not less than eight annas should be added. This pay, when earned, in any year should be drawn for the whole of that year counting from 31st March, with retrospective effect for the months between the 31st March and the date of the conclusion of the test firing.

To fix a standard of qualification for which efficiency pay would be granted would require a study of musketry results of the whole Native Army, and cannot be attempted here, but the standard should be such as to give the medium shots a fair hope of qualifying provided they consistently exerted themselves, while holding out inducement to good shots to do a little better still. The ammunition required would to some extent provide itself after the first year from the decreased number of repetitions in the Annual Musketry Course resulting from improved shooting, and the course itself might be reduced by one or two practices, the rounds made available being used with good results in the proposed test firing.

FIELD ARTILLERY.

A LECTURE.

BY LT.-COLONEL C. P. FENDALL, D. S. O., R. A.

I am venturing to appear here this evening to lecture on Field Artillery, because, in the opinion of many of those best qualified to judge, the introduction of a quick-firing gun marks the dawn of a new era for the arm. Very possibly many of the ideas as to the tactical employment of Field Artillery, which have been universally held for the last 30 years and more, may have to be altered. The role of Field Artillery will remain what it has been in the past, *i.e.*, the support of the other arms. More especially perhaps I should say the support of the infantry, by whom alone the fight can be ultimately won. What we have to consider is how we can best do this under the changed conditions, which recent improvements in Field Artillery material have brought about.

From very early days, the use of some means for throwing a heavier projectile than a man could throw unaided has been general. Before the adaptation of gunpowder to propelling projectiles, catapults and other engines for casting huge stones against walled places and for the defence of the same were in use.

The fact that a mixture of sulphur, saltpetre and charcoal was to a certain extent explosive, is supposed to have been known to the Chinese in very early days, and was used by them to make what was called Chinese fire. It is said that the discovery of the fact that such a mixture was really explosive was the result, as many other far-reaching discoveries have been, of an accident. In the 8th century a monk experimenting with such a mixture found it was a true explosive. This discovery is surmised to have been due to the use of much purer ingredients. Some time later it came to be used as a propellant. The earliest guns were very heavy and clumsy and were only used to take the place of the catapults, etc., already mentioned.

Exactly when guns were first used in the open field is doubtful. It has often been stated that guns were used by the English at the battle of Crecy. This is not certain though there seems no doubt that the English army in that campaign had guns of sorts for use in sieges. In the 15th century, led by France, all nations used guns in the field. The guns in use at this time were still very heavy and clumsy and could only be got along with difficulty. Once dragged on to the field of battle and brought into action, on *that* spot they had to remain, and became the spoils of the army that occupied the field after the fight. During the 16th century their mobility was slightly improved, so that at the beginning of the 17th they could

to be paid, £50 at a time, at each of two five-yearly subsequent examinations? It might be asking too much to require an officer to pass as "interpreter" each time unless he were allowed to re-visit the country; but it would not be unreasonable to require him to take a simple "pass."

I do not think that a change such as above suggested would involve much trouble or expense, nor would it probably affect the supply of candidates; but it would certainly ensure that languages, once learnt, were to a certain extent kept up. The system recently adopted in England is a step in the right direction. Under the English regulation an "interpreter" is given £125 on qualifying, and a second sum of £75 on re-examination. To my mind the £200 thus expended might with advantage be spread over the longer period suggested in this article, thereby doubling the period during which an officer is expected to keep himself proficient in the language. The additional chances of obtaining Active Service, as well as the pecuniary inducement offered, would probably prove sufficient to make him wish to keep his name on the interpreter's list as long as possible. If such a rule were brought in for the Indian and the Home Services alike, the language question would be found to be on a far more satisfactory basis than it is at present.

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The desirability of such an attempt being allowed, the problem of the method of conducting it demands our attention. In the days of close order tactics, soldiers paraded and fought under the close supervision of their officers. The conditions of each man's performance were uniform. A few men were chosen for Light Infantry, and when organised in separate bodies their *esprit de corps* usually elicited effort. To-day each man is a skirmisher, his value as a soldier depending, apart from musketry, on his skill in fighting as a skirmisher. But if we try to devise a way by which each man shall be paid according to his skill as a skirmisher, we shall find difficulties so great as to make the idea impracticable. Firstly, to give each man a fair chance of showing his capabilities would take more time than can be spared from instruction, and if a fair trial under several conditions were not given, a certain number of men would be left who considered themselves ill-treated. Again, it would be quite impossible to provide a different bit of ground as a field for each man to prove his capabilities on, so that the last men examined would plainly have an advantage over those whose turn came first. Personal predilections, too, might not always be ignored. Officers in the position of judges might allow themselves to be influenced by the

knowledge of other qualifications, moral or physical, possessed by a candidate to the extent of passing, as qualified skirmishers, men who were not so in reality.

If there is no way of surmounting these difficulties, and it must be confessed that none is apparent, we must trust to obtain the best results by making instruction of interest, by sound discipline, and by thorough inspection, and turn our attention to musketry, the next essential branch of the Infantry soldier's art.

The present musketry course furnishes both a test for well-trained men, and an exercise for those whose training or skill is deficient, and these are sent back for further instruction and practice until qualified. The course is a great improvement on former courses, which were of the nature of a test only. It is the intention that men should be kept in constant practice by distributing the firing of the course throughout the year. The greater part of the tabulated course has of necessity to be fired during the six months of the summer, the cold weather being more suitable for field practices, and training in manœuvre of large and small bodies. The musketry training of the men during the part of the year when they are not performing or preparing for the annual course consists of the field practices, musketry exercise parades, fire control and fire discipline drills, and the constant use both in close and extended order of the rifle, with or without blank cartridge. No man can say that he has not ample opportunity of learning to use his arm on parade. On all parades fire is constantly opened, and the soldier then loads, aims, or appears to do so, and fires. Any one who has personally practised aiming and snapping for some days before shooting knows what extreme accuracy can be attained by this means alone without firing a shot, provided each snap is performed with the same care as when firing at a bull's-eye.

Yet the soldier, in spite of all the practice he gets, requires to go through a course of "position drill" before his annual course, and if called on to fire at other times, without previous special practice clearly shows that his skill has deteriorated in the interim and that his powers of really accurate shooting leave much to be desired. He is, in fact, not half good enough for the splendid weapon he carries.

The reason for this is not far to seek, and it is, that hardly a man when snapping at objects on parade pays proper attention to his aim. He does not shoot to hit. He may not knowingly shirk, but does not do his best. Such want of effort is due to lack of incentive to take the proper amount of trouble. It is not easily feasible for officers to see whether a man when snapping is really aiming or not (nor were it so, could officers and non-commissioned officers be sufficiently ubiquitous to watch all men), in addition to which there are many other points which claim attention on parade or at field work. Now, if the soldier could be driven or led to take pains with himself whenever he is called on to perform the acts of aiming and snapping and so get the full benefit of the immense amount of practice, available

for him, what a great difference it would make in the efficiency of the army. Each man of such an army would surely be worth three wholesale-trained conscripts. If, then, an increase of pay gave an opportunity for trying some system of payment by results in musketry, let us consider in what way we could attain the object of causing all men to put forth continuously their best efforts to maintain their shooting powers at the highest standard of excellence attainable by their physique and eyesight. In order to do this it is plain that men would have to be called on to prove their shooting powers at unexpected times, and so the tests would be held at irregular periods each year.

It would be advisable to give men access to their rifles freely, under supervision, so that those who felt the need of improvement should have the chance of extra practice in aiming and firing. The tests should be such as to take little time, for the working year is already filled by the programme for musketry and tactical training, and there is little time to spare. Conditions in the tests should be the same for all, that is to say, the range should be known so that men firing first should not be handicapped, calm days should be chosen, and, within corps at least, the state of the ground, wet or dry, should be the same for all, so that the strike of bullets should be invisible or visible to all alike.

Again, it would not be fair to judge a man's marksmanship from one day's shooting only, for the best shot may shoot badly on an "off" day. The test should consist in taking the average of shooting performed at two or three trials held at intervals sufficiently long to prevent indisposition on one occasion affecting a man on the next; indeed the longer the intervals, the more probability there would be that men would keep up their practice for that year.

The object would not be attained by testing men at short distances, for a man with shaky hands often manages to shoot well at short distances by a timely jerk of the trigger when he sees the foresight on the mark, but cannot shoot at longer range where higher class work is needed. Moreover, the range ought to be such as to demand an intelligent use of the backsight and a study by each man of the peculiarities of his rifle.

Lengthy aiming and hesitation in firing are out of place in a test of a soldier's shooting powers. A reasonable time to fire the rounds allotted should be given, and rounds not fired within this time should be forfeited.

Lastly, precautions would be needed against favour or affection, there should be no pulling in or out of targets, a British officer should count the hits and, till that was done, no one else should be allowed near the targets, and a British officer at the firing point should write each man's total at the time the hits were signalled, which would be done as soon as they were counted.

This may seem a lengthy list of requirements, but, given the ground, which is available at nearly all Indian stations, or, in default thereof, given the simultaneous use, for one day at a time of all the

ranges in a station, there will be found no difficulty in complying with them.

To economise time thirty or forty targets should be used, one for each man firing, set up as far apart as possible but arranged in groups of four or five for easy identification, the firers being told off in similar groups, each man opposite his own target.

The distance might be between 900 and 1,000 yards, 7 rounds allowed and 10 minutes to fire them in counting from the time when all the men firing had got into position and made themselves ready, thus allowing ample time for observation of strike and correction of sights. After each party of 30 or 40 men had fired, the British officer at the targets would count and signal the hits on each target, which would be entered at the time against the firer's name by the British officer at the firing point. The targets would then be pasted up, and a fresh party of men fire. In this way a whole battalion could easily be tested in one day, and the conditions for all in that battalion would be the same. The men's efficiency would be decided by the average hits made at three such tests. The target might be a three foot bull's-eye on a white ground, the latter being for visibility only, hits on the bull's-eye alone being counted.

Efficiency pay granted on the standard thus determined should be issued in sums of not less than one rupee per mensem for the lowest rate, and for the higher rates, if any, increments of not less than eight annas should be added. This pay, when earned, in any year should be drawn for the whole of that year counting from 31st March, with retrospective effect for the months between the 31st March and the date of the conclusion of the test firing.

To fix a standard of qualification for which efficiency pay would be granted would require a study of musketry results of the whole Native Army and cannot be attempted here, but the standard should be such as to give the medium shots a fair hope of qualifying provided they consistently exerted themselves, while holding out inducement to good shots to do a little better still. The ammunition required would to some extent provide itself after the first year from the decreased number of repetitions in the Annual Musketry Course resulting from improved shooting, and the course itself might be reduced by one or two practices, the rounds made available being used with good results in the proposed test firing.

FIELD ARTILLERY.

A LECTURE.

BY LT.-COLONEL C. P. FENDALL, D. S. O., R. A.

I am venturing to appear here this evening to lecture on Field Artillery, because, in the opinion of many of those best qualified to judge, the introduction of a quick-firing gun marks the dawn of a new era for the arm. Very possibly many of the ideas as to the tactical employment of Field Artillery, which have been universally held for the last 30 years and more, may have to be altered. The role of Field Artillery will remain what it has been in the past, *i.e.*, the support of the other arms. More especially perhaps I should say the support of the infantry, by whom alone the fight can be ultimately won. What we have to consider is how we can best do this under the changed conditions, which recent improvements in Field Artillery material have brought about.

From very early days, the use of some means for throwing a heavier projectile than a man could throw unaided has been general. Before the adaptation of gunpowder to propelling projectiles, catapults and other engines for casting huge stones against walled places and for the defence of the same were in use.

The fact that a mixture of sulphur, saltpetre and charcoal was to a certain extent explosive, is supposed to have been known to the Chinese in very early days, and was used by them to make what was called Chinese fire. It is said that the discovery of the fact that such a mixture was really explosive was the result, as many other far-reaching discoveries have been, of an accident. In the 8th century a monk experimenting with such a mixture found it was a true explosive. This discovery is surmised to have been due to the use of much purer ingredients. Some time later it came to be used as a propellant. The earliest guns were very heavy and clumsy and were only used to take the place of the catapults, etc., already mentioned.

Exactly when guns were first used in the open field is doubtful. It has often been stated that guns were used by the English at the battle of Crecy. This is not certain though there seems no doubt that the English army in that campaign had guns of sorts for use in sieges. In the 15th century, led by France, all nations used guns in the field. The guns in use at this time were still very heavy and clumsy and could only be got along with difficulty. Once dragged on to the field of battle and brought into action, on *that* spot they had to remain, and became the spoils of the army that occupied the field after the fight. During the 16th century their mobility was slightly improved, so that at the beginning of the 17th they could

almost keep up with the infantry on the march. At this time that great soldier Gustavus Adolphus appeared on the scene. Recognising early in his career the value of Field Artillery he set himself to improve the efficiency of that arm. The lines on which he worked were to improve the mobility and rate of fire. He designed a 3-pr. gun of 2·6" calibre weighing 460lbs., and for this gun he used fixed ammunition. The shot was wired to a wooden case which contained the charge. Striving still further after mobility he designed what was known as a leather gun. This consisted of a copper tube bound about with bands of iron, further strengthened by being bound with rope set in cement, the whole covered with leather. This gun weighed only 90lbs. It does not appear to have been a success as it was only used in Poland in 1628.

Gustavus was the first to make artillerymen soldiers. Up to his time they had been a civilian guild employed to work the guns in time of war. He organised his artillery into regiments and batteries with the result of adding greatly to its efficiency. The men were not mounted. The horses were hired. He also attached one or two guns to each of his infantry regiments, an arrangement which continued for a long time after his death. The result of his reforms was that the mobility and rapidity of fire of his artillery were the admiration of Europe. His guns kept up with the infantry without delaying them, and at Breitenfeld in 1631 the Swedish guns fired three rounds to one of the Imperialists.

Gustavus massed his guns. At the passage of the Lech in 1632 he had 72 guns in one battery. At Lutzen, in the same year, there were two batteries of 26 guns each. These were in addition to the regimental guns. The artillery duel lasted for some hours. It is said that his successes were largely due to the efficiency of his guns and the intelligent use he made of them. At this time no attempt was made to manœuvre guns on the field of battle. The action commenced with the fire of artillery. When it was considered that sufficient effect had been produced by the guns, under cover of the smoke and the confusion caused by their fire, the cavalry charged and the infantry advanced to effective range. A century or more later Frederick the Great did not consider that his artillery was taking its proper place on the battlefield and searched for the cause. He found that the artilleryman's status was very low and the officers very ill educated. He insisted on a much higher educational standard and raised the status by making the officers rank with those of his Guard. His was a period of much increased mobility. Flank marches were undertaken on the field, in place of all battles being fought out in parallel lines as had been customary for many years. Frederick fully appreciated the important assistance that artillery could give, when properly used, to prepare the way for, and support, the attack of the other arms.

Several instances occur where the success of the charges of his large bodies of cavalry was assured by the enemy being thrown

into confusion by the fire of his artillery just previous to the charge being delivered, and the attacks of his infantry were equally assisted by the fire of a powerful artillery. Frederick invented Horse Artillery, mounting his gunners to enable the guns to accompany cavalry. Horse Artillery was first used in the raid into Bohemia in 1759.

Napoleon, himself an artilleryman, had great faith in the power of the arm, and himself says that many of his great successes were due to the artillery. In his time, owing to the limited range at which any great material effect could be produced by artillery fire, guns once fully engaged at effective ranges were out of the hands of the G. O. C. He therefore kept a large force of artillery under his own hand. He began his battles by advancing with the infantry masses of artillery to cover the advance by its fire. Having by their means discovered the weak and vital points of his enemy, he made up his mind when the attack should be made which if successful would give him the absolute victory. Then having selected his point he made a grand stroke at that point, preparing the way for, and supporting the advance of, his infantry by the fire of the guns he had held in hand and now threw into the fight at the decisive point. The guns thus kept in reserve were not a reserve of artillery in the sense of being guns kept back ready to reinforce the line of guns already in action but were from the first intended to be used, and were used, to prepare the way for, and support, that grand decisive stroke which was the keynote of Napoleonic tactics, and which frequently gave him the victory.

In this country in both the Sikh wars the artillery played a prominent part. Our army, weaker in artillery, was unable to silence the powerful Sikh artillery. The infantry had to attack before the fire of the guns had been got under, and suffered very heavily from the fire of guns they had to take at the point of the bayonet; the Sikh gunners fought with great bravery. At Chillianwalla it was intended that the various brigades should be accompanied and supported by field batteries told off for the duty, and in several cases the support was most effectual. Pennycuick's brigade advanced so rapidly that it masked the fire of the guns of the battery attached to it which also was prevented from getting on fast by the jungle. In some accounts the disaster which befell this brigade is said to have been largely due to the want of artillery support. The 24th Regiment which was in this brigade lost 13 officers and 231 men killed, 10 officers and 266 men wounded. Pennycuick, who belonged to the 24th, was killed, as also was his son, aged 17, an ensign in the same regiment, while defending his father's body. At Gujerat, on the other hand, when our artillery was the stronger and the ground better adapted to its use, the Sikhs were defeated by the artillery, and the losses of the infantry were very small, and were incurred at the taking of two villages which had to be stormed. The battery I command at present was at both these actions with heavy guns, as it had been at several previous ones. It was originally the

1st Company, 1st Battalion, Bengal Artillery, the first organised unit of that famous Corps. Its first great action was Plassey.

In 1866 rifled guns, which had already been used some years previously in Italy, were used on both sides, but the Prussians still had some smooth-bores as they doubted the efficacy of the new gun at close ranges. The effect produced by the Prussian artillery in this war did not satisfy the officers of the arm. They felt that they had not been able to give that support to the other arms which they were entitled to expect. The infantry, confident in themselves and in the superiority of the rifle they carried, attacked, and won the victory, before the artillery had gained the upper hand. But it was felt that when this infantry should be opposed to an infantry equally well armed as themselves, unless the artillery could give them adequate support the result would probably be disastrous. As a matter of fact the next time they had to go to war they were opposed to an infantry much better armed than themselves, but, thanks to the adequate support they received from the artillery, they again gained great victories. But several instances occurred where the infantry unsupported by artillery met with a bloody repulse.

The artillerymen of the Prussian army set themselves to work after 1866 to discover the causes of their failure and to remedy the defects discovered. They saw that under the changed conditions the reserve of artillery, a survival from the Napoleonic wars, was no longer necessary. They saw that they had also misconceived the *raison d'être* of this so-called reserve and had kept back guns as a real reserve to reinforce guns already in action, not as Napoleon had done, kept back guns for a special purpose, with good reason. They saw that now with the increased range of rifled guns, guns once in action were not out of the control of the G. O. C. but were still available to turn their fire on the decisive point, or if necessary to advance to support the infantry attack. They changed the name of the reserve artillery to corps artillery, and used it in conjunction with the artillery belonging to divisions of the army.

The principles they laid down then have been ever since the guiding principles of the employment of field artillery. These principles may be summarised as follows:—

That guns should be well forward in the marching columns.

That as many guns as possible should be brought into action at the earliest possible moment.

That guns should be massed under one man.

That guns should be brought into action simultaneously so that batteries should not lay themselves open to being knocked out in succession as they come up by fire being concentrated on them.

That irrespective of prospective losses guns must support the infantry in the final stages.

That these principles were followed in 1870-71 with eminent success we all know. In considering the probable action of guns in the future we shall see how far these principles still apply and what modifications are likely to be necessary.

Since 1870, great advances have been made in Field Artillery material and appliances. The gun used by the Prussian artillery in 1870 was a 4-pr. firing common shell with percussion fuze. With this equipment they were able to prevent hostile artillery unlimbering in the open within effective range, and could stop infantry making a frontal attack on a line of guns. In a recent article Colonel Reir says that it is calculated that the actual effect of the 18-pr. quick-firing gun is 60 times as great against troops in the open as the Prussian 4-pr. of 1870. The chief advances, affecting artillery, which have come about since 1870 are as follows:—

The adaptation of smokeless power for use in guns. The advantage this has conferred is that it has made it possible to fire guns without at once giving away their position, besides facilitating their service by doing away with the smoke cloud which was always getting in the way of observation. Precautions are still necessary to prevent the position being given away. The flash produced by smokeless power is very bright. A considerable amount of cover is required to hide this flash: 13 to 16 feet of cover is necessary, that is to say, when firing from a position behind a rise in the ground the flash can be seen from the front unless the rise is that height above the platform of the guns. The amount of visibility of the flash is much affected by atmospheric conditions, bad ground, etc. The blast on discharge raises a cloud of dust on dry ground. Watering the ground in front of guns or pegging down large tarpaulins obviates this to a large extent.

Shrapnel shell and time fuzes have been brought to a very high pitch of perfection. Shrapnel is essentially a man-killing projectile, the shell itself a case for conveying a large number of bullets which theoretically are released at any point of the trajectory desired and fly on at the same pace as the shell was going at the time of release, spreading out as they go, and so covering a considerable amount of ground. Thus shrapnel fire has effect even though the range and fuze may not have been actually found; at medium ranges the depth of ground covered is very considerable. Against troops in the open its effect may truly be said to be annihilating. Common shell for destruction of material or attack of cover can now be filled with high explosive. Such shell are said to have been largely used by the Japanese in their Field Artillery. It is still a vexed question whether their use in Field Artillery is advisable, but they are regular projectiles for use with Field Howitzers and the heavy guns which will take their part in the battles of the future. Their special use will be for the attack of shielded guns and entrenched troops.

The quick-firing gun now introduced by all nations gives an enormous increase in fire power. Owing to various devices the quick-firing gun does not require to be relayed between each round, and a rate of fire of 20 rounds per minute can be reached. The introduction of this stamp of gun has been rendered possible by the use of smokeless powder. Shields to protect the men working the guns have been rendered practicable by the introduction of a gun which

does not recoil. It is obvious that if men have to step clear for every round the value of a shield is much diminished. When the gun does not recoil the men can remain under cover of the shield. These shields render the gun detachment practically safe from the effect of rifle fire and short or medium range shrapnel fire from the front. At long ranges they cannot give such complete protection owing to the increased angle of descent of the bullets.

The Field Howitzer with its powerful high explosive shell and shrapnel with steep angle of descent will be especially useful for the attack of shielded guns, and for the attack of troops entrenched in such a way that the ordinary shrapnel of the field gun cannot touch them. The Heavy Field Artillery will also be very useful for similar objects, and will be capable of being used at very long ranges; if brought up fairly close they will be able to enfilade parts of the hostile line which otherwise might be safe from such fire. The importance of this will be dealt with later.

The improvements in appliances for directing the fire of batteries have made it possible for a battery to be brought into action in an unseen position and fire at targets it cannot see with as great a chance of hitting those targets as if they could be plainly seen from the battery. These instruments have only lately been introduced into our service, and I believe many officers of the regiment still seem to have doubts as to their use. I am convinced that it is only want of experience in their use that makes them doubt, and that as we get thoroughly used to them we shall find that we can direct fire by their aid as accurately as by the direct method, and also that the delays which we have found result from their use will largely disappear. I don't mean to say that fire can be carried out quite so quickly when you have to signal your orders from half a mile away as when you can shout them direct, but good signallers take very little time to send short orders.

The Germans, notwithstanding the various advances which have been made in Field Artillery material, naturally enough are loth to depart from the principles of the use of Field Artillery which were proved to be so sound in 1870, although there are indications that they are beginning to doubt their soundness. The French have taken the lead in putting forward new ideas as to the employment of the arm.

While the French admit the necessity of guns coming into action in the open on occasion, they consider that they should come into action under cover and fire indirect as a rule, except when in close support of the infantry attack. The Germans think that the guns should come into action sufficiently near the crest to fire direct, and hope that the protection afforded by shields and such digging as may be possible will suffice to protect the detachment from undue loss. The French consider that an advance in support of the infantry attack will be possible. The Germans consider that owing to the increased range of modern guns it should be possible to support the infantry attack from the positions originally taken up, if those positions are well chosen at first.

These two opinions seem to have something more behind them. The French contemplate some of their batteries at least owing to their hidden positions being undiscovered by the enemy. The Germans would certainly be discovered eventually if not at once. It is obviously more likely to be possible to advance guns which had not been discovered, whose preparations for the advance would be hidden from the enemy, and who would break into the open at some unexpected spot, than it would be to advance guns whose cessation of fire would be noticed and would at once give an indication of what was going to happen.

The Germans say mass your guns and bring at once an overwhelming fire to bear. Your own effective fire is the best protection against the enemy's attempts at your destruction. The French say only bring sufficient guns into action to attain the immediate object ; keep the others in hand to be used as the occasion demands.

The various points here brought up require more detailed examination.

The covered method has its advantages, and the tendency in our service seems to be that every effort should be made to obtain cover. Talking of cover, it must be borne in mind that cover from view does not mean cover from fire. If the shell fired will clear a crest in front the enemy's shell clearing that crest can hit you, because the angle of descent of their shell will be steeper than the angle that you are firing at. But it is possible to cover your guns and detachments in a position in which the enemy cannot see you, while if they can see you it will probably be impossible. We are told now that we must cover our guns and detachments before opening fire if possible. But if the tactical situation does not allow of that then as soon after as possible. From all we have heard of the Russian and Japanese artillery both sides seem to have dug themselves in as soon as possible, but we must remember that the guns had not got shields which will make the necessity for digging less absolute.

A Russian colonel gives a very good account of his experiences of the advantages of the covered position and the use of appliances for directing fire from such a position. Apparently the guns he was with on the occasion had lately arrived from Europe and were provided with a goniometric sight, of which previously he had had no experience. Having taken up a position some 500 yards behind a ridge on which gun-pits had been dug, he with seven batteries engaged thirteen Japanese batteries and kept them tied to their position all day. The Japanese were at first deceived by the gun-pits and ranged on them ; then finding that their fire was not effective they increased their range, but never did so sufficiently to reach the Russians, who suffered practically no loss. He was so much pleased with the result of his day's action that he expresses himself as convinced that such a position should always be occupied if available. He mentions incidentally that the Japanese invariably looked out for the observing parties and fired on them, while they themselves were great adepts at hiding their observation parties.

An American correspondent, writing of the battle of Telissu, says that looking from the Russian positions towards the front not an enemy could be seen, but that such a hail of shell came from this apparently innocent looking country that in 15 minutes 64 Russian guns were put out of action. The fire was then turned on a regiment that had just arrived from Russia and was getting out of the train, and 900 men were put out of action by this fire from hidden guns in 30 minutes.

The opponents of the covered position say that control of fire will be impaired by guns having to be separated. That it will be as easy as if guns are massed under direct control of one man no one will say, but these two instances of effective use of it seem to show that it is not impossible to control fire under the circumstances. In the first case the Russians must have had their fire well under control to be able to pin a very superior force of Japanese to their positions for such a long time, and in the second the Japanese must have been able to control and concentrate their fire to knock out the Russian guns so speedily and then change on to a new target and inflict on them such appalling losses in such a short time.

It shows also that a covered position may enable a smaller number of guns to be employed to achieve a definite object than would have sufficed had they been in the open. It will enable guns to be withdrawn for a fresh object if needed, and as we see in the instance quoted above it may enable batteries to effect their object with very small loss.

What some people consider a disadvantage is that it will certainly call for distribution of guns. Cover of course will often be unobtainable. In any case it is very unlikely that cover will be obtainable for a large number of guns massed, while it may be obtainable for individual batteries spread out. I mean, that though in five miles of front it will be very unlikely to find a single covered position that will fulfil all requirements and contain 100 or even 50 guns, it is quite possible that 10 or 15 positions might be found on the same ground that would contain 6 or 12 guns each. The range of modern guns is so great that if these positions are not too distant the fire of a large proportion of these guns distributed over this extensive front can still be concentrated on any one point of the enemy's line that may be desired.

The chief question we have to deal with to my mind is how the shielded gun is to be attacked. It has been pretty well proved by experiment that the protection afforded by shields as compared with unshielded guns against shrapnel fire is as 7 to 1. It has been calculated theoretically that to cause such losses in a battery of unshielded guns in the open, that they could not fire some of their guns through losses of men, requires roughly 100 shell which burst correctly. This fire against shielded guns will be ineffective. It is evident then that some other method must be adopted, for guns will be expected to keep down the fire of, if not destroy, hostile guns. At distant ranges the bullets have a

much greater angle of descent, and so the shields give less protection. As against this we must remember that the more distant the range the more difficult to observe your fire, and so the more likely that your shrapnel are not properly effective. Anyhow shrapnel fire from the front from field guns will take a long time to have any real effect and the expenditure of ammunition will be enormous. The means suggested which seem most feasible are howitzer fire of shrapnel with a great angle of descent and high explosive shell, or with some sort of man-killing percussion shell for field guns proper. The French are said to be experimenting with a shrapnel shell which has a high explosive mixed with the bullets. The fuze is so arranged that when it acts as a time fuze this high explosive is not detonated but merely burns quietly, but when burst on graze the high explosive is detonated and throws the bullets violently in all directions. Another method is by attempting to get direct hits on the gun-shields. Such hits would certainly be effective, but are difficult to obtain.

Shields, however, will only give very much reduced protection against enfilade fire. Guns distributed over a wide front might be able to enfilade to a certain extent some of the enemy's guns, and thus by directing the fire of batteries against guns not direct to their front the desired effect might be obtained. Guns that could be seen doing this would naturally expose themselves to destruction by the guns directly opposed to them. As this seems a most probable way of guns being successful as against guns, it seems to be an argument in favour of guns being distributed under cover where such a course is possible. The action of heavy guns comes in here very prominently. Their great range will enable them to take up positions from which they can enfilade to a certain extent some of the enemy's line, positions from which the field gun cannot act, and thus keep down the enemy's artillery fire, while the field guns turn their attention to the enemy's infantry.

At some point of the artillery fight it is probable that one side will begin to suffer to such an extent that it will be borne in upon the commander that if this goes on his guns will become useless altogether. As the *raison d'être* of artillery is to assist the other arms by supporting the infantry advance when on the attacking side, by destroying the enemy's infantry in their advance when on the defensive, it is obvious that to allow yourself to be rendered ineffective before the advance takes place, if you can avoid it by any means, must be wrong. It is probable that there will come a time when it will be better for the artillery which is being outmatched to retire their men under cover and wait until their fire can be of use. Although their reopening of fire at a later stage may be the signal for their being quickly overwhelmed, they may very likely be able to inflict great damage, and even to turn the scale, by their fire before this occurs. Thus the guns of the defence having ceased fire, the attacking infantry advances, supported by their guns, who keep the infantry of the defence from making effective use of their rifles

Suddenly when the attack is crossing a favourable bit of ground, the defending guns open on them, and with the immense power of the modern gun there is no reason why they should not inflict such losses as to stop the advance before the attacking guns can turn their fire and silence them again, and the fact of fire having to be turned on the guns will allow the defending infantry to use their weapons with effect.

Against infantry in well-made trenches shrapnel fire of Field Artillery cannot expect to have much material effect, but they can render such infantry harmless, by keeping up such a fire that they will not be able to show themselves to use their arms effectively.

The second great problem that presents itself to the artilleryman now comes before us—how are we to keep up our fire and so keep the defenders' heads down without unduly exposing our own infantry to danger of loss from our own fire. The longer the range the less depth is covered by our bullets; this seems to argue for supporting the infantry from a long range. It is unlikely, however, that the support so given will be sufficient. Then we must advance to support them right up to the flank of the advance. At the time such an advance would be made it does not seem likely that the infantry of the enemy will be in a position to stop it.

Such of them as are not hiding themselves from our shrapnel fire will be fully engaged in firing against the advancing infantry. Such an advance of guns would certainly be supported by the fire of guns in position. The quick-firing gun will be able to bring sufficient fire to bear on a trench to make men keep their heads down over a very considerable front, so that it is not probable that all guns will have to keep their attention fixed on the infantry trenches, but some will be available to keep down the fire that might be turned on the advancing guns to stop them.

There seem to be two ways which best promise success in thus advancing. Firstly the rapid advance of the horse artillery of the corps artillery, secondly the creeping up nullahs and folds of the ground of mountain artillery. The first will rely on the rapidity of their advance for immunity from destruction, the latter on their ability to hide themselves. There seems to be a great future before mountain artillery in this connection. Wherever the ground is broken, it is the mountain artillery that will be used to work its way to the front, take up a position on some rising ground perhaps, and give close support to the infantry. Cover of course at this time cannot be thought of, but once in action the detachments will be covered by their shields, and though they will no doubt suffer, there is no reason they should suffer any more than, if as much as, the infantry. The mountain artillery have not as yet got a quick-firing gun or shields, but considering the very important part they are likely to play in the manner suggested above, this is sure to be remedied at an early date. In speaking thus of the probable role

of mountain artillery in the future I may remark that this ability of mountain artillery to get up unseen to close ranges in support of the infantry advance has, I understand, been made much use of in Manchuria and has much impressed many onlookers.

In speaking of Gustavus Adolphus in the first part of my lecture mention was made of the regimental gun. Though it existed for many years it was done away with as being a mistake and a waste of power. It seems to a good many thinking soldiers that we are rather reintroducing the system by giving maxims to our infantry battalions. Many think we are making a mistake and that we should get much better value out of the guns, and much better effect would be produced by having maxim batteries, to act in much the same way as it has been suggested mountain batteries will act on the battlefields of the future. It is thought, that by being independent of the infantry battalions they would be employed to much greater advantage. The attaching of them to infantry battalions seems to contemplate only action on a very small scale when a battalion is acting alone, as, say on a small hill expedition, not when it will be acting as one unit in a division.

The actual employment of quick-firing guns will differ from that of the old gun as regards the management of fire, the fire tactics as distinct from tactics in the wider sense.

Ranging will still have to be accurately and more or less deliberately carried out. Observation of fire cannot be hurried to an unlimited extent, a shell takes a certain time to get to its destination and a man's brain takes a certain time to act, some men's much longer than others, I may remark. Once, however, the target is bracketed, satisfactorily that is to say, once you know that your target lies between two ranges, which you have discovered by having observed one shell burst short of it and one over, it is possible with the quick-firer to pour such a stream of bullets on that piece of ground containing the target that within a very short space of time such a large proportion of men in that space will be hit that the body of men will be demoralised. For instance, supposing a target is bracketed between 3,000 and 3,400 yards, the battery would fire at 30, 31, 32, 33, in succession two rounds at each. Such a fire would cover all the ground on which the target could possibly be. This system does away with the necessity of great nicety in ranging which is necessary with the present gun. It is also possible with the quick-firer to sweep laterally so as to cover a great length of line advancing, or a great length of trench. The practice ground results have been extraordinarily favourable to the artillery.

In future it will be the general thing for a battery coming into action to register all likely pieces of ground, that is to say, the correct range and fuze, which would be required to bring fire to bear on any place where you think a target is likely to appear, would be found, so that on a target appearing there fire could at once be opened on it, a note being kept of the range, etc., of each

place and its bearing from a prominent aiming point. This would be done especially of course by guns on the defensive, but it is considered that it might be advisable to tell off one gun in a battery to find ranges while the other guns were engaged elsewhere.

As a result of modern improvements in Field Artillery material it seems justifiable to conclude that massing of guns will not be necessary in order to obtain control of fire, that if cover is to be considered it will seldom be possible, and even when possible it will not be always advisable considering the importance of enfilade fire.

That owing to the difficulty of silencing shielded guns, which will frequently be hidden as well, the artillery duel will often be indecisive.

That when the attack of shielded guns by enfilade fire is not feasible, field howitzers and heavy guns will be wanted to keep down the hostile artillery fire and allow the Field Artillery proper to turn their attention to the hostile infantry, and in the absence of these some form of effective percussion shell is a necessity for Field Artillery.

That horse artillery to advance rapidly and mountain artillery to creep warily will be necessary to an army if the arm is to be in a position to properly assist the infantry in the attack.

That the fire of quick-firing guns against troops in the open will be absolutely paralyzing. The losses its fire will inflict will be so sudden that no troops will face it.

From this we may conclude that to carry an attack home the fire of the defending guns must be got and kept away from the infantry somehow, either by silencing men by losses or annoying them to such an extent that they cannot bring an effective fire to bear on the infantry.

I seem to have kept very much to the side of the attack. Much of what has been said, however, applies equally to the defence. On the defensive cover for guns is likely to be considered in taking up a position. Guns will probably be kept in hand to meet the infantry attack, and guns will have to decline to be drawn into returning the fire of the attacking guns. The registration of areas has been touched upon.

One more point,—the quick-firing gun will give the horse artillery acting with cavalry a much greater importance than it ever had before. The material effect guns will be able to produce in the limited time available in a cavalry fight will be so greatly increased that the horse artillery which is best handled and gets first into effective action should make the victory of its cavalry a certainty.

In this connection may I quote the well-known remark of David Harum, a remark that applies to other affairs of life besides that to which he applied it, namely, Horse dealing. 'Do to the other fellow what you know he would like to do to you, but do it first.'

At the conclusion of Colonel Fendall's Lecture General Sir Edmond Elles said,—

I have only a few brief remarks to make in regard to some of the points on which Colonel Fendall has touched. The first refers to the question of the massing and dispersion of batteries which has been very much discussed on the experience of the Russo-Japanese War. It really comes to this. It depends on two points. In massing guns you of course get greater control, but you cannot mass your guns unless the ground is favourable. In order to disperse them you must have means of communication, either efficient signallers or else telephones, otherwise you cannot get that measure of control which is so necessary, nor secure concentration of fire on any particular object. The Russians appear to have dispersed their guns a good deal more than the Japanese; the ground in Manchuria was not favourable to massing of guns. Intimately connected with this question is that of concealment and cover. It stands to reason that you must adapt your position to the ground. Colonel Fendall has told us that the Japanese and Russians almost always took cover for their guns. The Japanese were also adepts at making shelters, even when they were not shot-proof or bullet-proof, such as screens made of maize or jowar. It also seems as if the Japanese, being somewhat inferior in power of artillery to the Russians, used indirect fire more than their opponents. This would stand to reason because their guns were in consequence not so exposed. Signalling was used to a large extent on both sides. We unfortunately did away with signalling in the artillery in 1899, just before the Boer War, but it has been re-established both in England and in India.

The question of overcoming the enemy's artillery is intimately connected with that of ranging. It is rather interesting to know that the Russians followed the French system (one under, one over, one in the middle), and that the Japanese on the contrary used our system. The Japanese used a high explosive shell to range with, and that is why the Russians were constantly deceived. The high explosive shell seems to be very useful for firing on artillery or infantry in deep trenches, or on villages. We used high explosive shell against the Boers at Paardeberg, and they seem to have been very ineffective. Colonel Fendall has dealt with the question of using howitzers against guns shielded. The main difficulty is the small range and the high trajectory of the howitzer.

In firing, the Russians were distinctly superior to the Japanese. The Russian gun had a muzzle velocity of nearly 300 feet more than the Japanese gun: the rate of fire was nearly double that of the Japanese. The Japanese had usually more guns than the Russians and the Jap gunner was superior to the Russian.

As to mobility, it is noticeable that the guns seldom trotted or galloped; the usual pace was a walk. Perhaps one reason for this on the Jap's part was that their horses were rather small. When supporting the fire of infantry the Japs were very good indeed,

but as they say they have got the best infantry in the world, they very often did not need support.

The direction in which we seem to require to improve our training, and I believe it is being done, is to ensure greater care in going into action on the part of batteries. I saw a good many batteries a few years ago, and they invariably gave themselves away. It seems to me that if you want to train a battery now, the place of the Major is not with the battery but some distance off where he can see the enemy. Secondly, I think another line in which we want to improve our training is in intelligent co-operation between artillery and other arms. This has been very marked in the Russo-Japanese war. I am sorry to say that in our service officers are generally ignorant of the tactics of other arms. We work too much on separate systems. There is no doubt that intelligent co-operation is wanted between infantry and field artillery. It is only by co-ordinating the two arms—field artillery and infantry, and horse artillery and cavalry—that you can get good results. Horse artillery and cavalry work well together, but field artillery and infantry do not.

I think we all thank Colonel Fendall very much for his interesting lecture, and I am sure we will all profit by it. (Loud applause.)

1ST AND 2ND LINE TRANSPORT.

BY CAPT. F. W. HAWKS, SUPPLY AND TRANSPORT CORPS,
DEPUTY DIRECTOR-GENERAL OF REGISTRATION.

"The success of military operations must depend upon mobility, and mobility upon transport."

Before proceeding to discuss 1st and 2nd line transport, its organisation, composition and distribution to regimental units according to India Army Regulations, I think it will be useful to many officers if I draw a brief comparison between the principles of the system in vogue in England and the methods employed in India. Officers in India, interested in the subject of transport (and in these days, when its importance has been so fully realised, this means, every officer interested in his profession), besides being well acquainted with the system in force in this country, should at least know something of the corresponding arrangements in England, and should have a slight acquaintance, if nothing more, with the methods adopted by the principal military powers of the present day. On some other occasion I hope to touch on the last-named subject, but just now I will confine my remarks to 1st and 2nd line transport in England and India, and while comparing the systems in both countries I shall endeavour to avoid the common qualification of a comparison, *viz.*, its odiousness; I shall simply put down the points of both methods as they strike me, and if, as I think the reader will find to be the case, the advantages of the Indian arrangements preponderate, I trust he will keep steadily in view the fact that circumstances are very different out here to what they are at home, and we, in India, are bound to maintain a very effective and incidentally a very expensive system.

For the sake of completeness I shall perhaps be pardoned for briefly defining the terms "1st line transport" and "2nd line transport." Transport with regimental units (I avoid the term "regimental transport," because it has acquired a signification which is apt to be misleading, as I will explain later on) is divided into two parts—the one, called 1st line transport, accompanies the corps wherever it goes, marches directly behind it and carries all its most immediate necessities; the other portion, or the 2nd line transport, carries all the heavier belongings of the regiment and marches with the baggage column, which will often, especially when an action is impending, be some considerable distance in rear. It is very important that the regiment should not be embarrassed by too large a number of animals accompanying it, and the amount of 1st line transport allowed is therefore cut down to as low a point as possible; it must strike the happy mean between necessity and encumbrance, that is to say that, while being adequate for the conveyance of such

articles as are indispensable and essential to the well-being and health of the soldier, it must include no item that he can fairly do without for a time. The disadvantages of the presence of a large quantity of baggage with the fighting units are well exemplified by many instances, of which we may notice two in particular—The losses on the field of Isandlwana (Zulu War) were 132 wagons, 1,400 oxen, 400 shot and shell, 1,200 rifles, 250,000 rounds of small arms ammunition, £60,000 worth of Commissariat stores and over £2,500 in gold—(Furse). At Maiwand there were 2,599 combatants with about 3,000 animals. The losses in transport amounted to 1,676 camels, 355 ponies, 24 mules, 79 bullocks and 291 donkeys—(Furse). The greatest pains have been taken to make the discrimination in the case of Indian transport, and I believe the observer will admit by a study of the various articles carried on 1st and 2nd line transport which I shall detail further on, that, taking the anticipated conditions of active service into account, we may fairly claim to have arrived at an excellent solution of the problem and obtained the required desideratum. Future experience may alter the scale a little, and, naturally, varying conditions will entail its temporary modification from time to time for specific objects, but the principle is the great thing, and its definite adoption affords a reliable basis on which to found calculations and formulate plans. I have only one suggestion to make about it, and this I am discussing below; it is, that I think for Infantry as well as for Cavalry a certain amount of emergency rations should be carried on 1st line transport.

Troops in war have not infrequently to depend entirely upon their 1st line transport for a considerable length of time. For example—At the commencement of the Franco-Prussian War the German Army Corps had to advance with practically their 1st line transport only, and, for various reasons, their 2nd line transport could not be brought up till the middle of August; particularly in the case of the 3rd Army this involved great hardships, as the arrangements for its supply were very difficult. The German troops carried no tentage whatever when on the line of march, but then the country in which they were operating was densely populated and they generally managed to billet themselves in villages. The Confederate troops in the Valley Campaign (1862) form an excellent example of what men can do in face of difficulties, with a minimum allowance of transport—"The men still clung to their blankets and waterproof sheets, worn in a roll over the left shoulder, and the indispensable haversack carried their whole kit. Tents—except the enemy's—were rarely seen. The Army of the Valley generally bivouacked in the woods, the men sleeping in pairs, rolled in their blankets and rubber sheets . . . whilst it is absolutely true that no soldiers ever marched with less to encumber them than the Confederates, it is no empty boast that none ever marched further or held out longer"—("Stonewall Jackson"—Henderson). "Overcoats were discarded; men found that life in the

open hardened them to such an extent that changes in temperature were hardly felt"—("Soldier Life in the Army of Northern Virginia"). It must be borne in mind that these conditions were very different to those the German troops met with in France; the weather was generally most inclement, bivouacking the almost invariable rule, supply trains were often far in rear and rations were frequently scanty. These historical references are intended to illustrate the fact that 2nd line transport has often to be dispensed with—they are not meant to argue that it is unnecessary; far from it: what I wish to emphasise is the necessity for making provision for the evil day when 1st line transport alone has to be depended on, and for exercising the very greatest care in deciding upon the articles to be carried on it so as to reduce as far as possible the hardships entailed by the absence of 2nd line carriage.

I shall now proceed to compare the major details of English and Indian transport; for convenience of reference I have placed the various points under each system opposite one another, so that the reader may see the main differences at a glance

ENGLISH SYSTEM.

1. A number of non-commissioned officers and men are sent annually to A. S. C. units and depots for instruction in transport duty. This is a very important matter in England, and the training needs to be very thorough and systematic, seeing that the regimental unit has in war to find the personnel for its own 1st line transport. Second line transport is, I understand, in future to be provided complete by the A. S. C., as well as transport for staff and medical units.

2. Ammunition parks and columns are furnished by the Royal Artillery; the A. S. C. provides transport for supply parks and columns.

INDIAN SYSTEM.

1. Similarly each regiment is ordered to detail an officer, non-commissioned officers and men to undergo annually a course in transport training. But in war the regimental unit finds no personnel for its own transport beyond a regimental transport officer and men for its maxim gun mules. On mobilisation, for units in the fighting line, 1st and 2nd line transport is handed over at the base to each regiment complete in men and animals. Troops on lines of communication would ordinarily need only 1st line transport; the system being in no way a regimental one, even this might be withdrawn if circumstances admitted and required it.

2. Ammunition columns are furnished with transport by the S. and T. Corps (but Horse, Field and Heavy Artillery partly provide their own), which holds the necessary carts on charge

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open hardened them to such an extent that changes in temperature were hardly felt" — ("Soldier Life in the Army of Northern Virginia"). It must be borne in mind that these conditions were very different to those the German troops met with in France: the weather was generally most inclement, bivouacking the almost invariable rule, supply trains were often far in rear and rations were frequently scanty. These historical references are intended to illustrate the fact that 2nd line transport has often to be dispensed with—they are not meant to argue that it is unnecessary; far from it: what I wish to emphasise is the necessity for making provision for the evil day when 1st line transport alone has to be depended on, and for exercising the very greatest care in deciding upon the articles to be carried on it so as to reduce as far as possible the hardships entailed by the absence of 2nd line carriage.

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open-hardened them to such an extent that changes in temperature were hardly felt" — ("Soldier Life in the Army of Northern Virginia"). It must be borne in mind that these conditions were very different to those the German troops met with in France; the weather was generally most inclement, bivouacking the almost invariable rule, supply trains were often far in rear and rations were frequently scanty. These historical references are intended to illustrate the fact that 2nd line transport has often to be dispensed with—they are not meant to argue that it is unnecessary; far from it: what I wish to emphasise is the necessity for making provision for the evil day when 1st line transport alone has to be depended on, and for exercising the very greatest care in deciding upon the articles to be carried on it so as to reduce as far as possible the hardships entailed by the absence of 2nd line carriage.

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during peace and is responsible for their production on mobilisation, complete with personnel and animals, but regimental units provide British officers to command

Small Arm and Mountain Artillery (Divisional or Cavalry Brigade) Ammunition columns, and Native officers, non-commissioned officers, and sepoys or sowars for their escort. Ammunition parks are in charge of the Ordnance Department; they are called Ordnance Field parks, and the transport animals for them are, on mobilisation, provided by the S. and T. Corps. The S. and T. Corps finds transport for supply parks and columns, the latter of which are, similarly to the English system, incorporated in the transport allotted to brigades, etc. What are designated in England "supply parks" really answer to our pony-cart trains in India, which personally I should prefer to denominate "reserve trains." They are practically speaking "general" or line of communication transport, and as such I have classified them and described their functions in a previous article on that subject in this Journal. The supply columns, which, as I think, would be more fitly described as the "expense trains," replace expenditure of supplies carried on regimental transport, and draw on the reserve trains (supply parks), which, in their turn, fill up from the nearest magazine or advanced depot.

3. The transport kept up in England is 68 A. S. C. transport companies, 4 A. S. C. transport depot companies and 2 A. S. C. mechanical transport companies. Each service company is merely a cadre in peace.

3. In India we maintain as standing transport—17 Pack Mule Corps and 15 Pack Mule Cadres; 4 Cavalry Brigade Mule Corps and 3 Cadres, 2 Pony-cart Train Cadres and 13 Camel Corps, together with a complement of bullocks and carts. (*Note.*—The above figures do not include transport set aside for use with special garrisons.) We have not at present any mechanical transport companies, nor would these

be of practical use for 1st and 2nd line requirements: I have dealt with this subject in my previous article on "Line of Communication Transport." It will be noticed that one decided advantage lies in the possession of a considerable number of fully formed units fit to take the field at any moment; in fact we have sufficient of these to equip more than half our Field Army. As regards the expansion of cadres, I regret that I cannot deal adequately with this subject here: it is closely connected of course with Registration, the methods of which I have previously described.

4. Each A. S. C. service company is expanded on mobili-

4. We have, as I have already stated, a large number of fully

sation to fit the brigade, divisional troops, army corps troops or cavalry brigade to which it has been allotted.

formed standing units, to amplify which we have a considerable number of cadres. But, and here the discerning critic will put his finger on the weak spot in our organisation, they are not adapted to exactly fit the units to which they will be allotted, as in the English system. The consequence is that transport units may be split up into several fragments in war. It is not, however, in the least likely that this matter will remain long unremedied.

5. Transport for rations in the field.—The supply column with each unit carries 1 field, 1 grocery and 1 emergency ration per man and 1 forage (grain) ration per horse. On transport with the regiment is carried 1 field and 2 grocery rations per man and 1 forage (grain) ration per horse. Each man carries the unexpended portion of his previous day's ration (say $\frac{1}{2}$ ration) and an emergency ration: each horse similarly carries the unexpended portion of a ration. Total carried, say, $4\frac{1}{2}$ rations per man and $2\frac{1}{2}$ per horse.

5. No hard-and-fast rule for every arm of the service is laid down: it has been most wisely decided that as cavalry brigades will often be beyond the reach of their 2nd line transport, it is necessary that they should have some rations on 1st line transport, which accordingly carries 2 days' rations for each man and 1 day's forage (grain) ration for each horse. On their 2nd line transport is carried a further 2 days' supply for men and 1 day's forage (grain) for horses, while with the supply column is 3 days' for men and 1 day's forage (grain) for horses. For infantry 3 days' rations for men and 2 days' forage (grain) rations for horses is carried on 2nd line transport and 4 days' rations for men and 1 day's forage (grain) ration for horses with

the supply column. For transport animals 1 day's forage (grain) ration is carried on the animal extra to its load, 1 with 2nd line transport and 1 with supply column. In addition to the above each man carries 1 day's emergency ration on his person together with the unexpended portion of the current day's ration (say $\frac{1}{2}$); each animal similarly carries a half ration. Total carried therefore—For men, $8\frac{1}{2}$ days' rations; for animals, $3\frac{1}{2}$ days' grain rations.

I think it would be an advantage if we added an emergency ration in the supply column for each man; this would not weigh much and would be very useful. The scale of rations carried by the

soldier might also be increased by the addition of some ordinary rations. I may here observe that in the Franco-Prussian war it was the practice of both combatants to carry a much larger quantity of rations on the person. Each German soldier habitually carried 3 days' rations (while 10 days' more accompanied him on regimental transport and in supply and reserve columns), and the French carried varying amounts from 4 days' upwards. Von Werder's men in South France carried 2 days' rations besides their ordinary complement. The weight of rations carried does not appear to have affected the marching powers of the Germans. The Confederate troops, to whose marching I have already alluded, carried several days' rations in their haversacks.

The load carried by the Japanese infantryman, in addition to his arms and ammunition, consists of a greatcoat, pair of boots, *rations for 2 days*, entrenching tool, towel, linen and section of canvas tent.

An emergency ration for British troops need only weigh between 8 and 9 oz., and each ration could be composed of material calculated to sustain life for about 36 hours. For Native troops (and also for British troops) an emergency ration, light and portable, might easily be devised which, if firewood is unobtainable, could be consumed cold, or, with boiling water, would make a most nourishing soup. Something in the nature of peas-pudding has been used for this purpose before; it could be made of powdered dal boiled in water and formed into slabs of say 4 to 8 oz.: some of this could easily be carried by Native troops in addition to their present reserve ration, which weighs 1½ lbs. To the European at least (if not to the Native) it fulfils one of the main desiderata of an emergency ration, *viz.*, it is eminently unpalatable—the reason for requiring the material of an ideal emergency ration to be so is obvious. I would advocate therefore the inclusion of some emergency rations in the 1st line transport of both Infantry and Cavalry units, as well as the conveyance of some ordinary rations on the person. It seems feasible both on the face of it and by precedent.

The supply park or reserve train under both the English and Indian systems carries a varying amount of rations and forage; this is not exactly right; there should always be a definite organisation adapted for some specific purpose, and I have no doubt but that we shall presently see some change in this direction in India.

6. Each battalion has but one pack animal; this is not advantageous for the progress of education in that most important matter, packing and loading for pack transport. The British Army is liable to serve in any part of the world and conditions will frequently preclude the em-

6. Though battalions have not all got pack mules attached to them in peace, yet in every large cantonment there are generally plenty. Moreover, the importance of instruction in packing and loading having long been recognised as an essential part of the soldier's regimental training,

ployment of any transport but pack, at least for 1st line.

effective arrangements have been made to supply such regiments as are not located in places, where mule corps and cadres are maintained, with pack mules for regimental training for some months every year. Thus every soldier is, or should be perfectly competent to load up the mules allotted to his regiment in war.

To sum up: The system in England, at any rate for 1st line transport, is purely regimental; 2nd line transport used also to be so, but I understand that in future the A. S. C. is to provide it. This is no doubt due to the lessons learned in the South African campaign, where the system was entirely regimental before General Lord Kitchener reorganised the whole transport service and abolished this wasteful arrangement. According to our views it is still a defect that even 1st line transport should remain regimental; it is indeed usual to keep their 1st line transport with units, even when employed in guarding lines of communication, to ensure their mobility, but it can readily be imagined that circumstances will often arise when it would be absurd to keep so many such valuable animals as mules ineffective with a stationary regiment, which might, perhaps, under certain conditions, be equally well equipped with slower moving forms of transport or even might not need to be provided with any transport at all (but this would be exceptional). Under the regimental system the transport would remain inoperative, but under our methods it can be at once withdrawn immediately the necessity for its retention with a unit ceases to exist.*

THE ORGANISATION AND COMPOSITION OF TRANSPORT AND ITS DISTRIBUTION TO REGIMENTAL UNITS, DEPARTMENTS, ETC.

Transport, excluding "general" or line of communication, is divided under several heads—

(1) First line, which has already been described, is also spoken of as "obligatory pack mule" transport, which means that in order that a regimental unit (Cavalry, Artillery or Infantry) may always have its immediate necessities within reach, and to ensure its mobility under all circumstances, pack mules must always be provided. The following items are carried on 1st line transport:—Blankets or warm coats, section reserve ammunition, entrenching tools, pakhsals, cooking utensils, medical and signalling equipment, and, for Cavalry units, rations.

(2) Second line transport: This carries Quartermaster's stores, office, coffee-shop, baggage, S. and T. Corps equipment, armourers'

* The Transport Department should supply all branches of the Army with drivers, animals, carriage and equipment; it should likewise provide officers and non-commissioned officers for the auxiliary or general transport so that one system under one direction may be followed throughout the entire transport of the Army. ('Military Transport' Furse.)

tools, rations, forage (grain) and regimental reserve ammunition. The scales of this class of transport are two, *viz.*, (a) normal, and (b) alternative. The normal scale for Cavalry, being fast moving, consists of mule-carts, and for Infantry of camels. The alternative scales in both cases are any substitute for the normal (such as pack mules, bullock-carts or any other form of transport) if it is not procurable.

(3) Ambulance transport: The medical equipment with regiments is carried on 1st line transport; it consists of medical panniers, companion and haversack. Besides this there are two dandies with bearers, and 24 stretchers to be carried regimentally. Field hospitals are with 2nd line transport and are equipped according as they are detailed for Cavalry brigades or Infantry units; in the former case they have pack mules obligatory 1st line, mule-carts normal 2nd line, and ambulance riding animals. In the latter case, pack mules obligatory 1st line, camels normal 2nd line, and ambulance tongas with bullocks. In both cases they are also provided with dandies and bearers. The subject of ambulance transport offers so wide a field for description and discussion that I must leave it for another opportunity, when I should like to consider all the most suitable arrangements that can be foreseen and made (from an ambulance transport point of view only) for a man from the time he drops, wounded or sick, in the field till he is safely received into the General Hospital at the base.

(4) Transport not included in the above, departmental or miscellaneous, such as that for supply columns (or expense trains), divisional ammunition columns and ordnance and engineer, field and siege, parks. In the first case the normal transport is the same as that of the 2nd line of the transport of the unit it accompanies; for divisional ammunition columns the normal scale is mule or pony-carts; for ordnance field parks, pack mules, bullocks and camels (the ammunition is carried in the reserve ammunition wagons), for engineer field parks, mules and camels, and for Engineer siege parks, mules and bullock-carts.

It will be observed that I have said nothing about the peace or war organisation of the transport corps which will equip regimental and other units. This is such a large subject that it must form a complete article by itself. The utilisation of different classes of animals, the provision of the various scales of transport, the most suitable and economical methods by which transport can be kept up in peace, are all factors tending to introduce varying organisations, distinctive and separate for pack and draught mules, ponies, bullock-cart trains, camels, and other classes of animals; for economical reasons we have in peace, cadres of mules and ponies, and Silladar, Grantee and self-supporting camel corps.

Other subjects for discussion are the patterns of saddlery, harness, and carts in use, with their respective advantages and disadvantages: the gradual improvements which have from time to time been made in them: what improvements still remain to be evolved: the description of various methods utilised by other

nations: the influence of the nature of the country in the probable theatre of war on the patterns adopted by different Governments, etc., etc. The most momentous item for our personal consideration is really the best pattern of pack saddle, and much information on this point may be gleaned and many improvements may yet be effected by a study of those in use with, and the system of packing adopted by, people who from time immemorial have been experts in the art. The best exponents are the Mexicans, the ranchers on the Pacific side of the Sierra Nevadas, and, nearer home, the Panthays of Western China. Really good packing requires three postulates—

(a) A mule suitable for pack carrying—I am afraid this does not always get the attention it demands.

(b) A practical and efficient pack saddle.

(c) A good and economical method of packing, by which an animal can carry the maximum of load with least damage to himself. (As regards a maximum load, a few remarks will be found below.)

The pressing importance of the subject has been forcibly brought home to us many times, and in fact the consequences of non-observance of its primary rules are still *en évidence* on the backs of many pack mules in this country. A significant object lesson was presented in the American Civil War, though it might have been supposed that this nation, if any, could have ensured good packing: 300 mules were on one occasion brought back to Washington, which had been loaded *only once*, yet “such was the terrible condition of their backs that the whole number required to be placed at once under medical treatment”—(Harvey Riley)—and fifteen died from mortification of their wounds and injuries of the spine. In many cases the backs of the remainder were so scarred as to render them ever after unfit for use as pack mules.

I will not now touch on these subjects but will confine my remarks here to the classes of animals employed; and the normal methods of conveyance adopted in 1st and 2nd line transport.

The normal scale for different units is—

For 1st line—mules.

For 2nd line—mules and camels.

It may perhaps be accepted that mules are absolutely necessary in India for 1st line transport; such reliance cannot be placed upon the competency of any other class of animal to follow a regiment wherever it may go and to keep pace with it. If it were not for the fact that regiments in the fighting line will often have to manœuvre over exceedingly difficult ground, precipitous and rocky, and along narrow hill tracks, it would be a simple matter to suggest some other more economical form of transport and one more easily procurable. But provision must be made to guard against the worst circumstances and most difficult conditions, and we have therefore no choice but to put our money on the mule. Substitutes there are, and fairly efficient substitutes too, but inferior to the mule. I will allude to them later, and

Mules.

I am very far from saying that, with such care and professional skill as is at present being brought to bear on the subject, we shall not be able to evolve some animal to equal the mule; I only say that we have not done so yet. Meanwhile, to discuss things as they stand to-day, we want mules, and there are only two ways of getting them, *viz.*, in the country, or by importation. The indigenous mule which has been carefully bred and raised is a good animal, unfortunately, however, they are not procurable in any large numbers (but still there exist more than many people would have us believe), and the fostering of the mule-breeding trade, its development and the consequent increase in the supply is not by any means, to my thinking, a difficult matter. I hope that the arguments which I shall bring forward in support of this contention will be as convincing as I should like to make them. To return, however, to the present, it may be admitted that the existing local market is scanty and insufficient, and that the indigenous supply is not equal to the demand; we are forced therefore to have recourse to importation, and I will deal with this subject first.

The field for selection of foreign mules is fairly large: China, Persia, North and South America, Africa,

Importation.

Italy, Spain, and many other countries produce a supply of mules varying in quantity and suitable in a greater or less degree for our requirements. We must naturally endeavour to combine quality with economy and get an animal sufficiently fitted for our purposes as cheaply as possible. This would narrow the field down to China and Persia, but we have not as yet been able to tap a supply from either of these countries capable of fulfilling our demands. No doubt the resources of China are ample, but the difficulty is to get at them, and, at the present time, North China, as a means of supply, may be said to be practically closed to us. Western China produces a very considerable number of mules, and its proximity to our Burmese frontier should render arrangements for their supply easy; middle-size mules are, however, by no means abundant; the class of animals which almost universally preponderates is quite small, but, merely for that reason, decidedly not to be despised. However, the still unsatisfied demand forces us still further abroad, and we must turn to America, where we find a market practically unlimited so far as we are at present concerned. But the quality of the various breeds remains to be considered; economy is not effected by purchasing certain animals just because they are cheaper than others; the conditions under which we require to work the mule must be carefully weighed. To suit us he must be capable of withstanding extremes of climate, severe cold and intense heat; he must be agile and capable of climbing rocky and precipitous tracks; he must have the digestion of an ostrich and he must be prepared to be often on the shortest commons. Animals bred and brought up in enervating climates, and those accustomed to a diet consisting solely of grass and lucerne must be rejected; the reason being that, in the first place, it is impossible to innure

them thoroughly to extreme cold, and, in the second, that it takes a very long time to educate them to the consumption of grain. (The advantages of the grain-fed over the non-grain-eating animal are plain: Sir Evelyn Wood, after the Zulu War, wrote that the former could go 25 miles a day against 15, the limit of the latter). The fact that such an animal, imported into India under peace conditions, becomes, after a time, acclimatised and appears to have settled down to his new surroundings, imparts a false sense of security; we must not be misled by appearances; the animal may be a fine up-standing, handsome, well-fed-looking beast, but he would be an utter failure should emergency require his utilisation under war conditions soon after landing. The order of suitability for our needs, in which I would classify the more easily procurable imported mules (with which alone we are concerned), is—North American, North Chinese, best; then Western Chinese, Persian, certain classes of African, and South American (not necessarily in order of notation). (European bred mules I have left out of account.) I have very little doubt but that the North American mule is by far the best, but unfortunately he is rather an expensive luxury. They are handsome animals and very hardy; I have seen them in Pekin standing picketted out in the depth of winter without any covering, and if that is not a test of hardiness, I do not know what is; they are bred, some of them, in districts where I understand that it is a common thing to find horses and mules with the tips of their ears nipped off by frost-bite. The mules are largely bred in Missouri, in the surrounding States, and in Texas, and are generally speaking divided into two classes: the "sugar" mule, a heavy animal running to 16·2 hands in height, and the "miner," 12·2 to 13·1. It is estimated that there are at present about 2,750,000 of these animals in the U. S. A., the principal markets being Chicago, St. Louis and Kansas City. Such animals as these, grain-fed, hardy and strong, with cast-iron constitutions, would be ready for work very soon after landing, whereas the grass-fed variety will be found to suffer from want of heart and will certainly be useless for any practical purpose (I allude to war conditions) for a long time. This opinion is based on our own experiences in South Africa. Anyone desirous of realising what the North American mule is capable of under ordinary, but especially under service, conditions, is referred to the pages of Harvey Riley. He describes animals which served right through the Civil War, from Bull Run to the fall of Richmond, and others which followed the Army of the Potomac through all its campaigns.

The mules procurable in North China are certainly as hardy in the matter of withstanding extremes of climate as the North American animals. Their special good points are their suitable size, strength, good temper and the facility with which they may be trained to pack or draught work. They are bred in the Provinces of Shansi, Honan, Shantung, Chihli, Kansu and in Manchuria; also in the Upper

Yangtse basin, Ssuehuan, Kuei'chou and Yunnan. They appear to care little for the severest blizzard that sweeps in winter, laden with sand from the Gobi desert, over the frozen plains of Chihli; and, on the other hand, the oppressive, if short, hot weather of that and the adjacent Provinces does not seem to affect their working powers or appetite. The Chinese "mafoo" or muleteer is one of the best men at his particular profession in the world; he thoroughly understands his animals, their capabilities, their ailments and their dieting, and he gets the maximum of work out of them while studying attentively all the time their comfort and condition. Ragged-looking and ill-favoured many of the animals may be, so much so that the inexperienced "foreign devil" would regard them as fit only for the knacker, but the mafoo knows better; he does not judge by looks but by qualities. In this connection, why is it that the unfortunate transport officer is often slated because the animals standing in his lines are thin, or, as it is generally put, "in bad condition?" Why should not conclusions be based upon the analogy of human beings? Can't a thin man work? There are plenty of men who might be continuously fed on batter without "going on from day to day getting a little fatter" like the White Knight. Let us argue the matter out from the point of view of common sense. The mule's weakness is in his legs, and his feet are ordinarily very small. With these he has, as a general rule, to carry a horse's body. Now, if the animal is fed up excessively on flesh-forming substances, does it not follow that his body will certainly get too heavy for its supports, and hence that spavins, ringbone and other ills that the mule is heir to will result? Harvey Riley says "feed a mule with as much as he will eat clean;" you don't want to fatten him up like a prize porker. Obesity in man is classed as a disease; some seem to think it a virtue in a mule. The true test of fitness is of course hardness of condition—good, hardworking condition and good health; mere leanness does not argue ill-health, nor is the most sinful ugliness any criterion of working capacity. I do not wish to convey the impression that all North Chinese mules are bad looking, this is far from being the case; but I do know that the fatal propensity of many mule purchasers to choose a nice sleek beast while rejecting, perhaps against their better judgment and, from fear of the consequences, the somewhat coarse looking animal really worth twice as much, is a cause of derision to the wily seller and a patent method of getting as little as possible for the money.

In every country mules and other animals are brought up and habitually fed on that forage most easily procurable, *viz.*, that grain of which the climatic and other conditions of the land most favour the cultivation. It is a mistake therefore to suppose that an animal which has, all its life, been accustomed to a somewhat stinted diet, let us say, of kao-liang (millet), bran and black beans, mixed with chopped millet stalk, can be at once brought on to a

generous feed of perhaps gram or barley; nor can an animal, which has, from its earliest youth, been habituated to a life of unremitting toil, change suddenly without ill-effects on its interior economy to a comparatively luxurious existence on three full grain meals a day. The analogy is somewhat the same as if you were to translate an Indian coolie suddenly to a palace and stuff him with the richest fare procurable. The absurdity of the latter proceeding would be plain, and it is consequently extraordinary that it should have ever been difficult to realise the disastrous effect on the mule. The meaning of this is that the character of the North Chinese mule was to a certain extent blown upon in India because errors were made in feeding, and the moral is that, in importing mules, endeavours should always as far as possible be made to gradually educate the animals to their new conditions.

A very good little mule (generally 11 to 11·3 hands in height) is found in Western China: it is small but capable of carrying very heavy loads in the most mountainous and difficult country. Everyone who has seen these plucky little animals at work in Yunnan and on the Burmese frontier will bear me out in saying that they are marvels of strength and endurance. One could hardly call them pampered in their diet either! They get what they can pick up, and this, according to Major M. E. Willoughby, *vide* his report on the mules and ponies of the Province of Yunnan (W. China), is supplemented, when on the march, by a morning and evening feed, each consisting of about 1½ lbs. paddy, beans or maize. Smallness of size, though it undoubtedly has drawbacks, cannot really be reckoned as a great disadvantage, provided the animals are well up to the authorised load: small mules are certainly much better than the other extreme, *viz.*, very large mules, of which Riley remarks that they are "good at lowering haystacks and cornbins." A small mule will do with very little food and will keep well on it, and the advantages of this during heavy marching cannot well be overestimated. A large mule must be allowed a longer time in which to graze, or fill himself up somehow, whereas a little mule will graze enough for his sustenance in a very short time and will have opportunity to rest; especially when fodder is scarce the advantages of the small mule will be very apparent.

Persian mules are also excellent animals and suit us well. The principal markets are Isphahan, Kermanshah and Bagdad; they are bred by the Buktiaris and Ilyats in the North of Persia, on the Turkish frontier of Turkish Arabia and in the Koh Siah and Ran Hormuz districts of Arabistan. The mules of the Bushire-Teheran district are perhaps better than those of Arabistan. The latter may be divided into three classes—

(1) The Arab mule, which is well bred, generally sound and serviceable: to be bought in considerable numbers around Bagdad. Average height 13·2.

(2) Mules of the Shuster and Dizful districts. These are larger than the Arab mules and mostly unsound.

(3) Mules of a large coarse breed, 14 to 15 hands in height bred in the Kermanshah and Burnjird districts. These are also mostly unsound.

Large numbers of Persian and African mules of nearly every variety have from time to time been imported into this country, and specimens will be found in almost all large transport lines; lately also South America has been indented on, and many thousands of mules from that country are now employed in India. The African mule varies in size, breeding and shape from the small Abyssinian (like the Panthay mule, above described, but generally darker in colour and smoother in appearance) to the middle-sized, handy and hardy South African and the large Algerian; it would be a work of supererogation to describe them all in detail. The South American animal is well-looking but generally the reverse of docile; whether his performance will come up to his superficial promise is a matter to me personally of considerable doubt: I hardly think that his antecedents, to say nothing of the experience gained of the value of his relatives in the South African War, warrant the pinning of much faith on his efficiency. Though in the Zulu War, 400 mules from Monte Video were found to do best of all imported mules, yet there the climate, feeding, etc., was similar to that in their native country; we have, moreover, no details to show where these particular mules originally came from, nor how they were bred.

I turn now to the indigenous supply of mules, at present very meagre, which we ought in my opinion to use every effort to foster and encourage. Mule-breeding is carried on almost exclusively in North India, and, if the figures given to us as representing the numbers of this class of animal extant in the country are in any way accurate, it must have fallen off very considerably as a profession during the last few years. This is a very serious matter and one which claims very early attention, for no one can doubt the very obvious advantages to be gained by the provision of supplies of any kind from the country itself instead of having to depend upon importation. The most prominent of these advantages are (I speak generally and as regards any class of supplies)—

(1) The ease with which supplies, available in the country, can be obtained. The fact that importation of the supplies required might be stopped for a protracted period just when they are most wanted, must by no means be lost sight of.

(2) The valuable reserve to meet future demands, which an indigenous product of the particular article required, establishes.

(3) The expenditure in the country of money which would otherwise go abroad, and not always to England or our Colonies at that (in the case of mules seldom to either).

(4) The reduction in annual expenditure, the increase in revenue and the employment of the people.

To obtain all these advantages we have but to encourage trade in the country; why import anything which can just as well be turned out in India?

At present mule-breeding is carried on hap-hazard, and so, for the matter of that, is mule-dealing; the first step to be taken is to systematise both by legislation; and if, in doing so, we impose any restrictions on the parties engaged in the trade we must be careful to give counter-balancing, in fact at the start (by way of encouragement) more than counter-balancing advantages. Mule-breeders' guilds ought to be established in urban and rural districts, and no person should be allowed to engage in mule-breeding operations unless he belongs to a guild; each guild would of course be licensed and would be under the primary control of the district authorities. Mule dealers ought to be licensed and bound to keep an accurate record of their transactions; they must belong to one or more guilds. The idea is that the dealers should finance their own particular guilds, and there is no doubt but that sufficient would come forward to do this. Service by Government jacks should be free, as it is now in certain places; but though every care must be taken to exclude the use of unsuitable stallions, it will be impossible to prevent the people using their own if they want to; they must be brought, however, to see that it will not pay them to use any donkey stallions but Government ones, or those which have been passed and branded as fit for breeding purposes. This difficulty will be overcome by discrimination between foals likely-looking and unlikely-looking for Government purposes. Each guild will be granted, free at first, afterwards perhaps at a reduced rental, grazing grounds or runs for young stock; foals belonging to each guild, for which their owners take advantage of this benefit, will be lightly branded, and, at the annual inspection, such young animals as show signs of bad breeding or unfitness, will be excluded, while those well bred and suitable will be finally branded. Prizes should be offered annually for the best young stock. Government would have to offer a guarantee for the purchase of from 3,000 to 4,000 mules at fixed rates annually, this demand to be divided among guilds according to their various capacities; in return for this, Government would retain the option of purchase of any branded mule not exceeding four years of age. The above is merely the main principles of the idea; I believe that, if properly worked, it would result in the outturn of a very large number of fit mules annually. There is not, I am aware, at present a sufficiency of mares in the country to give so large an outturn, more especially when, bearing in mind that we must not, so to speak, kill the goose that lays the golden egg, we remember that to keep up the supply of mules it is also necessary to breed ponies. The best plan will therefore be to begin at the beginning and to start at first breeding more mares; to import mares would seem to be a shorter course, but I am informed by a professional opinion that this would not be satisfactory; the mules thrown would be generally too large and the mares would need to get acclimatised before

they would breed at all. For such operations money would be necessary, but I contend that it would be far better, setting aside the very obvious advantages of an entirely indigenous supply as enumerated above, for Government to put down a lump sum to be expended in initiating the scheme than to go on paying out yearly an extra sum over importation of mules, representing a principal of which the lump expenditure required now in the country would be but a small fraction.

Speaking now generally about mules, there are two points to which I wish particularly to allude. One is the practice of working mules too young, than which nothing can be more deleterious and wasteful, but yet it goes on under our noses; and the other is the weight which a pack mule is capable of carrying. As regards the first point—In India the mule breeder is, to a certain extent, forced to be a consenting party; Government cannot be expected to purchase more than a few young mules to bring up for its own purposes and the breeder cannot afford to keep the foal himself. He therefore sells it to a dealer, who perhaps disposes of it to a trader, who ignorantly overloads and overworks it at a tender age. The consequences are soon apparent: the muscles of the back and of the hind legs give way; the back becomes weak and the legs crooked, not to mention the fact that the animal is frequently scarred by saddle-galls and its utility impaired by fistulous withers. The mules of the country, then, when Government becomes an urgent purchaser, will be in the great majority not worth buying. The scheme detailed above would remedy this state of affairs. As to the weight a pack mule can carry—Over-loading destroys the mature mule as well as the youngster. Traders habitually overload their mules, and so impair their vitality and usefulness should Government ever want them. The Army load on a transport mule, of 160 lbs. nett, works out to more than 200 lbs. gross, taking saddle, etc., into account. It is calculated to be enough and not too much under all conditions of bad roads, execrable weather and scanty feeding. Riley gives much attention to this subject and quotes many instances on which he bases his opinions. Mr. Anderson, one of the best mule packers in the State, on a journey of 500 miles with 75 mules, found that the average weight, which could safely be packed, was a little less than 200 lbs. In another journey Mr. Anderson loaded selected mules with 300 lbs. each; they gave out completely at the end of two weeks; again he loaded 50 mules with 250 lbs. each, and gave it as a result of his experience that mules going 300 miles with 250 lbs. each will, at the end of that journey, be so reduced as to require at least four weeks to bring them into condition again. Remembering that these experiments were made under the most favourable circumstances, regular feeding, fixed stages, no standing about under loads, waiting for the troops, receiving every care and attention, no forced marches, and we see that 160 lbs. nett is enough for any Government transport mule. Riley, in fact, says that, when the weather is bad and grass poor, 140 to 150 lbs.

is enough for any mule to carry.* Compare this with the following remarks:—"A Persian mule will carry 3 cwt. over the worst roads and so continuously" ("Narrative of a Journey through the Province of Khorassan," etc.—Sir Charles Macgregor). A noble animal indeed!

2ND LINE TRANSPORT.

As has been already stated above, either mule-carts or camels will ordinarily be utilised as second line transport, the former for Cavalry or fast moving arms, and the latter for Infantry, Field Artillery or other slower moving units. In considering the class of transport most suitable for both second line and line-of-communication purposes, we must not lose sight of the great principle that all depends upon the country where the army happens to be operating, which largely influences the selection, and it comes to this, that, as a general rule, that form of transport which the natives of the country have from time immemorial adopted for their own usage is probably the best. In deciding upon it the natives have been guided by long experience in choosing those animals or vehicles most suited to the country and its climatic conditions. As a general rule, therefore, indigenous forms of transport should be our guide in the selection of what we shall employ. But, at the same time, we cannot allow ourselves to be too closely bound by this rule; we must remember that the natives can choose their own seasons in which to travel, and that regular convoy work in trading operations is a very different thing from transport work with an army in the field. Animals which will go on for years in regular caravans, etc., working at favourable times of the year, receiving regular food, care and rest, may go under at once under the severities of protracted marching and inclement weather. Another great factor to be taken into account is the quantity of transport required: what may suffice for the people themselves in the course of their trade may be totally inadequate to meet the necessities of a large force. It behoves us therefore to adopt such forms of transport as experience of warfare in different countries has established as good and suitable (and which may be relied on not to fail under various conditions of difficulty), to supplement the indigenous transport procurable in any country where a large army may have to operate; and this transport should be especially fitted for the conditions prevailing in that country in which we may particularly expect to be engaged in war. Almost every continental nation keeps this latter point in view, and it is a great factor in their preparations for war during peace, as a review of the arrangements made by France, Germany, Switzerland, Italy, etc., will show. Let us consider therefore how far we, in India, have been guided by the above consideration. The camel, as being an animal produced in the country in large numbers and generally in

* In the Abyssinian Expedition the nett load for a pack mule had to be reduced to 100 lbs.

use for trading purposes, both inland and beyond the frontier, has perhaps naturally been counted on hitherto as the form of transport most suitable for our purposes *provided he is of the proper breed* (see remarks on this subject below); but the adoption of the double draught mule-cart does not follow the principles above enunciated. There are, however, undoubted arguments in its favour, *viz.*, the undeniable qualities of the mule and its economic employment in draught, the excellence of the cart itself, and the comfort assured to the troops served by such a method of transport, provided the conditions of country are favourable and the roads good, for it will then be able to move rapidly and keep touch with them under all practicable circumstances. But supposing the conditions are the reverse of favourable, suppose the tracks over which the transport has to follow the troops are narrow, bad and steep, suppose that supplies are limited and the country does not afford the necessary forage to keep the animals alive, and suppose that inclement weather renders the paths boggy and difficult; in fine, imagine that the conditions are, as the Federal Officer tersely expressed it in his reconnaissance report—"there is a road there, but I guess the bottom has fallen out of it"—("Stonewall Jackson"). The mules may then be taken out of the carts and used as pack animals (for the draught saddle can also be used for pack, and all Cavalry Brigade mule corps are in possession of baggage ropes). But to do this reduces the carrying capacity by 60 per cent (actually 64, allowing for spare, etc.), because two mules only carry 4 maunds whereas they can haul 10. Let us take a concrete instance and see how the matter works out. Suppose a Cavalry Brigade equipped with 515 pack mules (1st line), and 250 double draught mule carts (2nd line), arrives in a locality where it is impossible for its carts to proceed further. Its 1st line transport is already carrying the items given in the first part of this article, but the regimental reserve of ammunition, S. A. A. column, Horse Artillery Ammunition Column, the kits and the bulk of the supplies are on the carts, which are carrying 2,500 maunds (at the rate of 10 maunds per cart). By converting the draught mules to pack we get, knocking off the spare, and those required for carriage of transport corps equipment, say, 458 mules which will carry 916 maunds (slightly more than 36 per cent of 2,500). This would suffice to bring on the regimental reserves of ammunition, the Royal Horse Artillery ammunition column, and the S. A. ammunition Column, together with either certain additional kit for each man, or, say, two more full days' rations for men, the circumstances of the case deciding which is best. But even this arrangement does not get over the forage difficulty, and 1,584 maunds have been left behind, and it may perhaps happen that it will be impossible to bring it on for months. Would it not be possible to equip Cavalry Brigades partly with double draught mule-carts and partly with some other form of transport which would not offer such insuperable difficulties to progress in such circumstances as above set forth?

Single draught carts* may be uneconomical, in that they require twice the number of drivers for the same number of animals as would be used in half the number of double draught carts, but they are much lighter and have a much narrower track, and could be manufactured so as to be easily convertible into suitable hand-carts. Suppose a Cavalry Brigade were to be equipped with 515 pack mules (1st line transport as now), 100 double draught mule carts and 300 single draught carts of such a pattern as I have alluded to above. The 100 double draught carts carry 10 maunds each and the single draught carts 5 maunds each, total, 2,500 maunds. We have for the carts, say, 440 drivers instead of 275 as before, and there are, say, 189 mule-drivers with the pack mules, or 629 drivers in all. If the peculiar circumstances of the campaign necessitate a temporary advance of the Cavalry into a country where the forage available is only sufficient for the horses, the conversion of the single-draught carts to hand-carts would, at 4 maunds each, allow of the conveyance of 1,200 maunds, which would cover the carriage of the 1st line equipment with additional ammunition and supplies, all the mules being left behind; if the country can feed the mules but is too difficult for double or even single-draught carts, then, by converting all the mules to pack, and utilising the single-draught carts as hand-carts, nearly the whole of the 1st and 2nd line equipment can accompany the brigade. The single-draught carts would be convertible to hand-carts of a pattern such as I have alluded to elsewhere, the body easily detachable from the wheels to allow of portage over exceptionally difficult places: they might be propelled either by the drivers or by labour requisitioned in the country, or by some of both. The above arrangements may appear to some unnecessary, but it seems to me that it is important to evolve some such system as will provide for any emergency that may arise; it does not do to trust to luck and hope that no such circumstances will occur as would prevent the utilisation of the present normal scale of transport. "In meditation all dangers should be seen"—(Bacon). There is no doubt that such conditions are apt to be met with in fighting in a mountainous and uncivilised country. Though it is true that the Prussians, at the commencement of the Franco-German war, marched and fought a long time attended only by their 1st line transport, yet they were able to obtain adequate supplies in the country, and the weather at that time was at any rate warm and favourable; it would be unwise for us to build our plans on the assumption that we shall likewise obtain such advantages.

To turn to the normal 2nd line transport of the slower-moving units, it cannot be denied that the camel is far from being an ideal form of transport, and, working on the principle of the exclusion of every plan which does not overcome every probable difficulty, we

* Lord Roberts, reporting on certain pony-carts used in the last Afghan War, says, "These vehicles, which may be described as a combination of the ekka and the Maltese cart, are strong yet light, and will be of great assistance."

shall find that in a barren, inhospitable country, during a campaign at an unseasonable time of the year, the question of the provision of forage would debar the employment of animals to a very large extent. At certain times in the year I am sure that it would be with very great difficulty that the requirements of the animals, indispensable to the fighting units of a large army, could be met; how then could provision be made for enormous numbers of transport animals? Allowing that the camel is the normal baggage animal of the people of the country, and that, on that account, he ought to be good enough for us, yet against this may be urged that the natives use their caravans only at the most favourable times of the year and that the animals, when so employed, are taken over regular stages and are very rarely called upon to over-exert themselves during these marches; moreover, they receive regular feeding and sufficient care. Admitting that the supply of camels is equal to any anticipated demand, still the conditions of field service are often so much the reverse of the conditions under which the people ordinarily work the animals, that we are bound to consider whether the accepted principle can be altogether applied. Working on the plan that such arrangements as are decided upon must be suitable for any emergency that may arise, we shall find that, for operations in a barren, unproductive country, the forage difficulty will rule out the employment of large numbers of transport animals, and some substitute for at least part of them must be provided. I think that it will be found that, in such circumstances, the hand-cart will be eminently useful. Instead of keeping up large quantities of camel transport, cadres of coolies might be formed of men trained in the propulsion of light carts in mountainous country. An organisation for a corps formed on these lines will be found in *Army Tables Transport*, though such units do not at present exist.* Let us take the case of a British Infantry Battalion, and consider what can be done in the way of the substitution of cooly-propelled wheeled transport for animals (in the 2nd line only); it is plain that we cannot in ordinary circumstances altogether dispense with the camel, for to do so would entail the provision of an army of coolies with carts, seeing that the latter carry only 4 maunds each as compared with 5 conveyed by the former, and that each cart requires several coolies. It is necessary, then, to select the most important requisites (in the 2nd line) for a regiment on field service, and to arrange to provide cart transport for these. Ammunition and rations are the essentials; a plentiful stock of the former must always be at hand while the latter, in a country yielding no local supplies, is equally important. Let us note General Ewell's instructions to Branch, who was ordered to join his division with the Army of the Valley in May 1862—"You cannot bring tents no mess-chests, trunks, etc. It is better to leave these things where you

*In both the Lushai 1871-72) and Duffla (1874-75), Expeditions coolies were used to a great extent. The men for the Lushai Expedition came from the Punjab, what are now the United Provinces of Agra and Oudh, and from Darjiling. These coolies carried 62 lbs. gross, 40 lbs. nett.—Furse).

are than to throw them away after starting. We can get along without anything but food and ammunition. The road to glory cannot be followed with much baggage." (Official Record.) Provision for these two items might therefore be made on carts, and for the baggage, equipment, etc., on camels; of course it may happen that in some places rations will be of less importance than the carriage of extra kit; in such cases the rations would be left behind and more kit carried forward. For the baggage, equipment, etc., of a British Infantry Regiment 59 camels will be required; the rations for the camels and transport attendants will be about 8 maunds or, say, 2 camel loads, total 61 camels, or, with spare, 66. The ammunition (regimental reserve) will take 23 hand-carts and the weight of rations carried in 2nd line, including those of animals of 1st line transport, but excluding those of the coolies, will be 97 maunds. The coolies will require about 11 maunds; total rations, 108 maunds or, say, 27 carts; total 50 carts or 5 complete sections (*vide* Army Tables Transport). The total 2nd line transport for the regiment would therefore be 66 camels and 50 hand-carts as against 111 camels now allotted. The effect of this arrangement would be the addition of about two camels to the Supply Column for each regiment, but, on the other hand, the advantages are—

(a) A safe method of conveyance for 200 maunds of stores, whether ammunition, supplies or kit, in the 2nd line; for the hand-carts could go everywhere the troops could, their construction allowing of the easy detachment of the body from the axle, thus admitting of conveyance by portage over difficult places.

(b) The reduction in the number of fodder-consuming animals, which, if the country provided no forage, would, on the present scale, hang up the 2nd line transport altogether.

(c) The fact that manual labour is more easily procurable by requisition than animal, in barren, uncivilised countries. (This point is also a valuable one when we consider that outbreaks of epizootic disease will often seriously impair, if not completely destroy, the mobility of a column.)

(d) A useful help should 1st line transport animals break down.

It is true, as I have instanced above, that 1st line transport has often had to suffice for troops in the field; I have quoted the German Army in this connection, but in this case it is on record that, owing to the railway lines being given up mainly for the purpose of bringing the army corps to the frontier, supply and transport arrangements had to be partially neglected; consequently many men died from exposure, exhaustion and want of sufficient food. ("The Feeding of Fighting Armies."—Le Mesurier.) We do not want to risk this; consequently let us take steps beforehand to obviate it. If the Germans fared so ill in a country which General Sheridan (with the Prussian Headquarter Staff in 1870) describes in his Memoirs as follows: "Campaigning in France, that is, the marching, camping

and subsistence of an army, is an easy matter.....the country is rich, beautiful, and densely populated, subsistence abundant, and the roads all macadamised highways.....I can but leave to conjecture how the Germans would have got along on bottomless roads—often none at all—through the swamps and quick-sands of Northern Virginia.” How, I ask, would an army fare with its 1st line transport only in a bare desolate land, destitute of supplies and roads? Manteuffel might well be able to afford to abandon his baggage in his pursuit of Bourbaki’s broken army, and Vinoy could retreat from Sedan without his, but how different were the circumstances of supply and shelter! This thought may well give us pause.

Some remarks on the camel may conclude the present article. “The Almighty has created nothing as an animal preferable to the camel”—(Mahomed). But great care is necessary in selection. Steel says “The most serious drawback to the use of the camel in Army transport is his want of versatility.” Each particular breed is suited for certain climatic and geographical regions only. There are roughly seven classes of camels which are common in and around India, viz.—

1. The Afghan (procurable from Northern Afghanistan). These are good hill camels and can stand cold.

2. Hill or pahari camels; a hardy breed.

3. Bactrian (with two humps); Asia Minor.

4. Scindi; not suitable for cold climates.

5. Punjabi; also unsuitable for cold climates.

6. Bikanir; from Rajputana; cannot stand cold.

7. Persian; resemble pahari camels.

The above notes are taken from the Manual of the Diseases of the Camel, by Steel, who also makes the following significant remark (speaking of the Afghan War): “The mortality in Afghanistan was notoriously greatest among the large desert camels such as were brought from Scind and the Punjab; they were overcome by cold and mountain work, which the pahari camels were exposed to with impunity.....the valuable rule, *to use the trade animals of the country*, was not entirely adhered to.”

The authorised load for a camel is 400 lbs. or 5 maunds, and the average pace at which he will march under it is 2 miles an hour; 350 camels roughly will cover a mile of road, and the frontage required may be said to be $3\frac{1}{2}$ paces or, say, 9 feet; thus, on an ordinary 12-foot hill path there would not be room for much else. The Arabian camel (Scindi, Punjabi, Bikanir, etc.) is utterly unfitted to stand cold. Though these camels are cheap to maintain, requiring but little grain if they can get good grazing, yet they are delicate, and if continuously stinted will soon succumb, and moreover when thoroughly overworked they seldom recover condition again. Furse, in his “Military Transport,” remarks that camels would best be utilised on the staging system on lines of communication; they are ill suited to accompany an army making long and rapid marches. The heavy losses of camels in both the 1st and 2nd Afghan campaigns

were due to the cold and to fatigue; Hough gives the figures of the losses in the first war as 26,700. Furse gives the figures of losses with the Kurram Field Force as 9,496 between November 1878 and May 1879, and puts down the causes as starvation, cold and hard work; also want of selection. The difficulties of feeding camels in country such as that last alluded to are very great, when many thousands of them are employed; the grazing grounds near the road are soon exhausted and the animals have to go a daily increasing distance to get their sustenance; this, in addition to the march they have already done, wears them out, and, if they do not soon die, still they become useless for transport purposes. Moreover, the distance to grazing grounds will soon render grazing for a large number of camels an impossibility. The camel is a slow feeder and the journey to the grazing ground and back, the time spent there and the period necessary for rest, would leave little opportunity for marching with troops. It will be seen then that it is absolutely necessary to reduce the number of camels accompanying a force to as low a limit as possible, and to think out a suitable substitute for some of them which will get over the present *impasse* as regards grazing.

The following is a report on an experiment carried out at Shanhaikuan, North China, the materials used being only such as are actually in possession of Native Infantry Battalions on Field Service.

Uses.

Capabilities.

As a flying bridge.

Materials.

For each boat.—

1 Large mule tarpaulin.

2 Blanket stretcher poles.

4 do do. cross pieces.

4 Mule feeding-bags.

Uprights and ridge poles of one G. S. tent 160 lbs.

24 pieces log line.

1 Sepoy's waterproof sheet.

The working party consisted of two squads of one N.-C. O. and eight men each, from A and B Companies, 30th Punjabis, Sikhs, and all expert swimmers.

Working party.

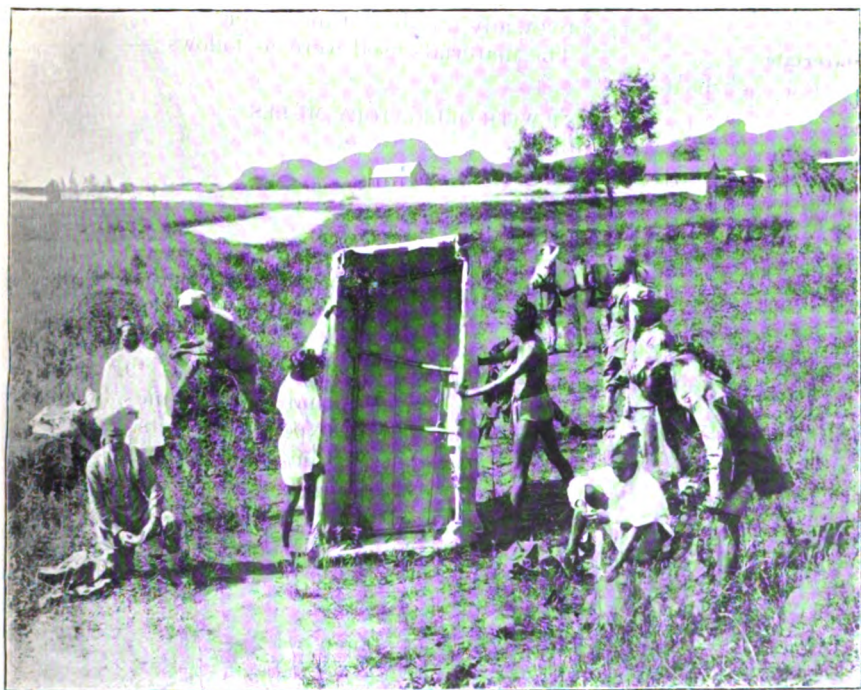
Time occupied.

Dimensions.

Length over all, on upper edge—8 ft
 " " , immersed edge—7 ft.



A—FORMING THE FRAMEWORK.



B—READY FOR LAUNCHING.



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Copy of a Report on the Tarpaulin Boat
Company, Report of the
Referee - General

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Beam, upper edge, 4 ft.—immersed edge $3\frac{1}{2}$ ft.

Depth 2 ft.

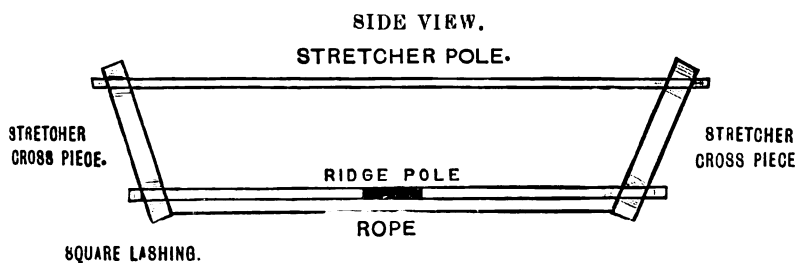
Weight complete 80 lbs.

Draught, unloaded 2 inches.

Do. carrying 4 men and the accoutrements of
the whole party ... 10 inches.

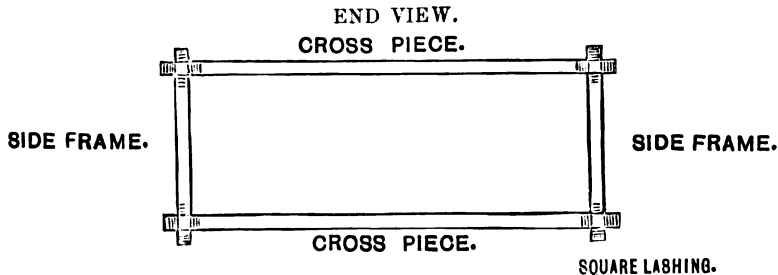
Do. carrying 6 men, fully accoutred ... 10 inches.

Construction. 1st Stage.—Lashing side frames—two.



(to hold ridge pole together)

2nd Stage.—Uniting side frames with cross pieces.



The cross pieces are halves of the upright poles of the 160 lbs. Indian tent.—*Vide* Photograph A.

3rd Stage.—Covering with Tarpaulin.

The frame above described is placed on a mule tarpaulin spread on the ground, four mule feeding-bags being placed under the corners to protect the tarpaulin from the sharp edges of the wood. The edges of the tarpaulin are brought over the upper sides of the frame and laced to the bottom pieces of the frame, holes for the ropes being made in the hem of the tarpaulin.

The boat is now ready for use, but to protect the men's accoutrements from any leakage, two halves of tent poles are lashed across the bottom of the frame and a waterproof sheet laid on these and tied by the corners to the corners of the boat.—*Vide* Photograph B.

Note.—As the tarpaulin used, 12' x 8', is in course of being replaced by a smaller one, which may be issued any day, it has become

necessary to utilise an alternative one, *viz.*, one made by sewing two ammunition tarpaulins together, thus forming one $12' \times 7\frac{1}{2}'$. A saddler is always present with mules on active service, and by experiment it has been found that he can carry out the joining in one hour. The tarpaulins belong to the S. A. A. Column which moves with the baggage.

**Copy of a Report on the Tarpaulin Boat by the O.C., 4th
Company, Sappers and Miners.**

Reference—Attached Correspondence.

I have the honour to report that I have carried out experiments with the tarpaulin boat referred to. The idea seems a practical one, and the improvised boat appeared to me to possess all the advantages claimed for it by the Officer Commanding 30th Punjabis in China.

I have the following remarks to make as the result of my experiments:—

1. The want of rigidity of the frames, a defect brought to notice by the Officer Commanding 35th Sikhs in his experiments at Nowshera, is one that requires to be rectified if the boat is to be of practical use.

I found, however, that by using extra pieces of log line lashed tight from corner to corner of each frame (ends, sides and bottom) after the fashion of diagonal braces, the frame work could be made quite rigid, and the resulting boat handled without danger of its losing its shape.

The extra lashings necessitate more time to put the boat together. I found it took six Sappers seven minutes to put the boat together (with the extra lashings) as against nine men (N.-C. O. and eight) five minutes as reported by Officer Commanding 30th Punjabis.

2. It is essential for a successful boat that one large tarpaulin should be used. Small tarpaulins jointed together by a Mochi, however well done, will not be watertight at the joints. The joints could, of course, be made watertight with the materials at the disposal of a Sapper Company, but the conditions under which the boat would be used presuppose the absence of Sappers on the spot.

3. The feeding bag as a means of protection to the tarpaulin from the iron points at the end of the tent poles is not a very good arrangement. It would be better to encase the points in pieces of wood cut from the nearest tree, or failing that to wrap them round with several turns of log line.

4. The boat worked well as a flying bridge when fully loaded; with a light load it is not sufficiently immersed to give a bearing surface to the current. It can be rowed by two men using shovels as oars provided there is not too much current.

5. My experiments confirmed the results obtained by the Officer Commanding 30th Punjabis in China as regards the carrying capacity of the boats.

ARTICLES OF MILITARY INTEREST FROM CURRENT PERIODICALS.

Military Promotion Examinations.

BY KILWORTH.

It has been well said that "it is the wearer who knows where the shoe pinches." Acting on this aphorism, I venture to offer a few suggestions to my brother officers gleaned from my experiences in a recent examination. I, at any rate, would have been glad of this information six months ago.

The candidate must first get the last and corrected editions of the necessary books, viz., on Tactics—*Combined Training, Frontier Warfare, and Bush Fighting*; on Law—*Manual of Military Law, King's Regulations*, and for Indian Army Officers, also *Indian Articles of War, Rules of Procedure* and *A. R. I. (Vol. II)*; on Topography—*Manual of Field Sketching*; on Fortification—*Manual of Fortification*; on Organisation—*Field Service Regulations* (of one's own arm); on Strategy and Military History—the books laid down for the particular examination. By reading the syllabus and orders for the examination the candidate can ascertain what parts of the books may be omitted. Now let him *read* each book through, say twice, but not make any attempt to *learn* the contents.

Let him then get a good book of "questions and answers" on each subject and work through them steadily, only using the books of reference allowed in the examination. *Let him mark the questions which he cannot do under examination conditions and write out those answers.* He should go through those questions again (without referring to the written answers), and he will find that the mere fact of having hunted up and written out those answers will have taught him many of them. He should then note the answers still wrong and repeat the above process. He will find, after having gone over the question three or four times, that he can answer practically any question on each subject.

To work up Organisation recourse must be had to the *Field Service Regulations* of one's own arm—the *Field Service Manual*, the various volumes of *A. R. I.*—Banning's or Brunner's "Organisation and Equipment" and some book giving details, omitted in the above, about the Imperial, Indian, and Colonial Forces and the systems of the English and Indian Headquarter administrations. An Indian Army officer should get details of the recruiting, promotion, pay, and reserves of his own arm in general and of his own unit in particular, instead of learning the details given for the British Army. There is much unnecessary matter in the *Field Service Manual*, and I found that

extracts of useful information from the entire book only occupied a sheet of foolscap. These extracts must be made from a corrected copy, a treasure not so easily obtainable. The Indices of the A. R. I. (indicating what subjects those volumes deal with) are the only important parts of those volumes. These books and the *Field Service Manual* can be borrowed from an office for the short time needed to make notes about them.

In order to learn Strategy let the candidate précis the "special" campaign and also two or three other well-known campaigns (*e. g.*, a campaign from James' *Modern Strategy*) illustrating various strategical points. Let him note the strategical points involved and, if he does not understand them, a reference to the same book will explain the difficulty. Let him then draw the maps, and write out the précis of the campaigns, and the notes on strategical points, from memory. Three or four repetitions of the above will suffice.

Having learnt the principles of tactics by reading the manuals and working through the book of "questions and answers," the candidate may now tackle tactical schemes. Such schemes are issued and corrected by the U. S. Institute, Simla, and two of each kind, *viz.*, attack of a position, advance-guard, rear-guard, outposts, convoy and frontier warfare, should be worked out. He will thus acquire some facility in dealing with tactical problems on maps, and in writing orders.

He must now do some "fortification schemes." If he has no friend to show him, let him get Shadwell's *Fortification Applied to Schemes*. This book also gives questions and answers on the *Manual of Fortification*. There are only, I think, two kinds of schemes possible, *viz.*, the defence of a position and the defence of a port. He must work out one of each from "Shadwell," and correct his solutions by those in the book. Let him then work out one more of each kind, remembering his previous errors and only using the *Manual of Fortification* as a reference. He will, I think, find that he can now "floor" the examiner.

When the candidate is getting to the end of his work on each subject, he should get the last examination papers and do the papers in the time and with the books allowed in the examination. If he cannot get the papers, he can set himself a similar number of questions from his books of "questions and answers" and do those under examination conditions. He should similarly work out his later "schemes" under examination conditions.

Working through the books of "questions and answers" on tactics, topography, and fortification will assist him in his *vivâ voce* examination in "C." In addition, for "C," he must know how to make a sketch on the ground, and how to make the simpler bridges, knots, etc., and how to place troops on the ground, in accordance with some tactical "idea" given him. This he can only learn practically after having assimilated the theory as I have described above. Officers of the mounted branches will require for "C" a simple book dealing with horsemastership in the field and in

barracks; the commoner diseases and their treatment; the aging and shoeing of horses.

I repeat again, see that the booksellers send the last editions both of the official and non-official books ordered. I have purposely not mentioned the books of questions and answers on tactics, law and topography as many such of much the same value are on the market.

* * * * *

If officers will follow the above advice, which I give from practical experience, I feel confident that they will have no difficulty in passing that modern bugbear, the promotion examination, with a minimum of expense.—*The Pioneer*, 3rd November 1905.

Artillery in Defence.

Lieutenant-General Sir John French has caused the following notes by Lieutenant-Colonel Du Cane, R.A., D.A.A.-G., of the Staff College, to be circulated to the officers of the Aldershot Army Corps on the subject of Artillery in Defence:—

“There are four things to consider in disposing artillery for defence—

- (1) Delay enemy's advance.
- (2) Artillery engagement with enemy's artillery.
- (3) Repelling the close attack of enemy's infantry.
- (4) Support of counter-attack.

(1) The enemy's advance can best be delayed by a few guns posted with a good field of fire, so that by sniping with a few rounds of rapid fire, laid direct, they can cause early deployment. These guns will probably draw the enemy's artillery fire from concealed positions. They must then be withdrawn, or they will be knocked out.

(2) The artillery engagement should take place from concealed positions. The defence can then refuse the deal or engage in it at will. In any case the guns of the defence can take advantage of a rashly exposed opponent, and the guns so disposed retain their mobility and can reinforce a threatened point or support a counter-stroke.

(3) Repelling the close attack of infantry raises the question as to whether guns that are originally in concealed positions can reach the crest to deal with an infantry attack. It is the experience of the Russians that they cannot do so in the face of modern fire-arms. It becomes, therefore, necessary to post some guns strongly entrenched in such positions that they command all avenues of approach at decisive ranges with direct fire. These guns should not open fire till the infantry attack develops, or they will be drawn into the artillery engagement, and in all probability rendered useless at the critical moment.

(4) The support of the counter-attack must depend on the commander's plan. It is always an open question whether a commander will wait to form his plan for counter-attack until the

enemy's main attack develops, or whether he will select the terrain most suitable for the counter-stroke and make his attack there, whether it meets the enemy's main or holding attack. To secure artillery support of the counter-stroke in the first case is difficult. It will in all probability be best to retain a certain number of batteries in reserve with the general reserve and trust to their being able to find positions from which to co-operate. The second method allows us to employ the whole of our artillery in the early phases and to dispense with reserves. We can ear-mark certain batteries for the support of the counter-attack and reconnoitre suitable positions for them. Batteries that have been taking part in the artillery engagement in concealed positions can be withdrawn and ordered to occupy these positions in sufficient time to afford the necessary support to the counter-attack.

Dealing with the delivery of an attack, the same memorandum adds that in keeping down artillery fire concealment is everything, and this will be the future condition of the duel. Artillery cannot afford close support to infantry from distant ranges. A feature of modern battles is certainly their long duration, and the Japanese method appears to have been to push in all the enemy's advanced troops and feel his position on the first day. They have then selected their objective for the main attack and moved the assaulting infantry and supporting artillery into position at night. In this manner they have been able to import the element of surprise into the main attack, which seems so essential in the face of modern fire-arms.—*The Pioneer*, 29th November 1905.

A Remarkable Colonisation Scheme.

The rumour that the Russian troops now in the Far East are to be left there receives striking confirmation from the announcement of a remarkable project for colonising that outlying region by settling there the troops of the Manchurian Army. The *Norosti* says that such a project is being worked out at present in the Department of Land and Agriculture, and that the Government is considering the question of colonising the Amur Territory, the Maritime Province running northwards from Vladivostok, the Government of Irkutsk, and the region of the Steppes by means of the Reserves and discharged soldiers now serving with the colours in Manchuria. The private soldier is to have the right, within one year of joining the Reserves, of settling in the Far East. He will be conveyed thither free of cost, and he will be allowed to choose anywhere about 42 acres of land, which will be given to him without payment. Such settlers will be exempt for life from payment of either Government or Zemstvo taxes: each man will receive from the State the sum of £10 12s. 6d. towards his expenses, and also the sum of £42 10s. within the next three years. The officers of the Manchurian Army, with the exception of the higher officers, will be

granted freely from 550 to 1,100 acres of land, and they must bind themselves to build a house and belongings on the land within five years. During the five years the land will be free of all taxes, and not liable to be sequestrated. It is believed that 100,000 families would be settled in the regions referred to within five years. The project looks all very well on paper. But behind it can be seen the wish of the Bureaucracy to have a large body of Reserves ready at hand in the Far East, and also near the Orenburg and Tashkend Railway, and at the same time to keep the disaffected soldiery away from European Russia. Russia's previous experiments in this direction have been failures, especially in the case of parcelling out the Bashkire lands in Orenburg and along the Black Sea coast-line, while, with few exceptions, the best pieces of land in Siberia have been taken up already, and the unappropriated portions are either too marshy or too waterless to be worth cultivation. In the last fifty years only 150,000 settlers have been settled in the Amur and Coast Province Territories. Thus it is not at all likely that the colonisation of Asiatic Russia will be carried out so successfully and so quickly as the authorities seem to think will be the case.—*Morning Post*, 11th November 1905.

Beam, upper edge, 4 ft.—immersed edge $3\frac{1}{2}$ ft.

Depth 2 ft.

Weight complete 80 lbs.

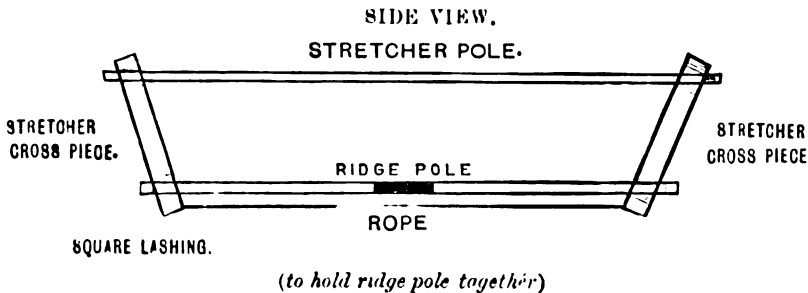
Draught, unloaded 2 inches.

Do. carrying 4 men and the accoutrements of
the whole party 10 inches.

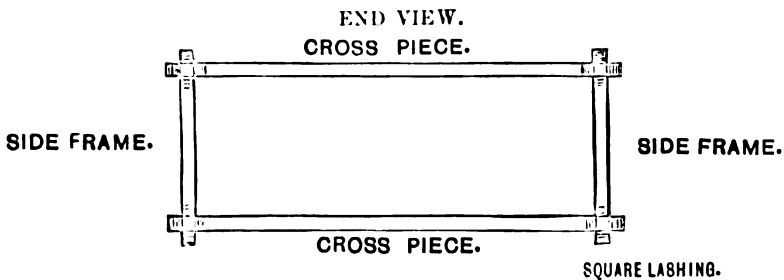
Do. carrying 6 men, fully accoutred 10 inches.

Construction.

1st Stage.—Lashing side frames—two.



2nd Stage.—Uniting side frames with cross pieces.



The cross pieces are halves of the upright poles of the 160 lbs. Indian tent.—*Vide* Photograph A.

3rd Stage.—Covering with Tarpaulin.

The frame above described is placed on a mule tarpaulin spread on the ground, four mule feeding-bags being placed under the corners to protect the tarpaulin from the sharp edges of the wood. The edges of the tarpaulin are brought over the upper sides of the frame and laced to the bottom pieces of the frame, holes for the ropes being made in the hem of the tarpaulin.

The boat is now ready for use, but to protect the men's accoutrements from any leakage, two halves of tent poles are lashed across the bottom of the frame and a waterproof sheet laid on these and tied by the corners to the corners of the boat.—*Vide* Photograph B.

Note.—As the tarpaulin used, $12' \times 8'$, is in course of being replaced by a smaller one, which may be issued any day, it has become

necessary to utilise an alternative one, viz., one made by sewing two ammunition tarpaulins together, thus forming one $12' \times 7\frac{1}{2}'$. A saddler is always present with mules on active service, and by experiment it has been found that he can carry out the joining in one hour. The tarpaulins belong to the S. A. A. Column which moves with the baggage.

Copy of a Report on the Tarpaulin Boat by the O.C., 4th Company, Sappers and Miners.

Reference: Attached Correspondence.

I have the honour to report that I have carried out experiments with the tarpaulin boat referred to. The idea seems a practical one and the improvised boat appeared to me to possess all the advantages claimed for it by the Officer Commanding 30th Punjab in China.

I have the following remarks to make as the result of my experiments:—

1. The want of rigidity of the frames, a defect brought to notice by the Officer Commanding 35th Sikhs in his experiments at Nowshera, is one that requires to be rectified if the boat is to be of practical use.

I found, however, that by using extra pieces of log line lashed tight from corner to corner of each frame (ends, sides and bottom) after the fashion of diagonal braces, the frame work could be made quite rigid, and the resulting boat handled without danger of its losing its shape.

The extra lashings necessitate more time to put the boat together. I found it took six Sappers seven minutes to put the boat together (with the extra lashings) as against nine men (N.C.O. and eight) five minutes as reported by Officer Commanding 30th Punjab.

2. It is essential for a successful boat that one large tarpaulin should be used. Small tarpaulins joined together by a Maikh however well done will not be watertight at the joints. The joints could, of course, be made watertight with the materials at the disposal of a Sapper Company, but the conditions under which the boat would be used presuppose the absence of Sappers on the spot.

3. The feeding bag as a means of protection to the tarpaulin from the iron points at the end of the tent poles is not a very good arrangement. It would be better to encase the points in pieces of wood cut from the nearest tree or to wrap them round with several turns of log line.

4. The boat worked well as a diving bell when fully loaded, with a light load it is so stiff that it is almost impossible to give a bearing surface to the current. It can be moved by two men using shovels as oars provided there is not too much current.

5. My experiments confirmed the results derived by the Officer Commanding 30th Punjab in China as regards the carrying capacity of the boats.

ARTICLES OF MILITARY INTEREST FROM CURRENT PERIODICALS.

Military Promotion Examinations.

BY KILWORTH.

It has been well said that "it is the wearer who knows where the shoe pinches." Acting on this aphorism, I venture to offer a few suggestions to my brother officers gleaned from my experiences in a recent examination. I, at any rate, would have been glad of this information six months ago.

The candidate must first get the last and corrected editions of the necessary books, *viz.*, on Tactics—*Combined Training, Frontier Warfare, and Bush Fighting*; on Law—*Manual of Military Law, King's Regulations*, and for Indian Army Officers, also *Indian Articles of War, Rules of Procedure* and *A. R. I. (Vol. II)*; on Topography—*Manual of Field Sketching*; on Fortification—*Manual of Fortification*; on Organisation—*Field Service Regulations* (of one's own arm); on Strategy and Military History—the books laid down for the particular examination. By reading the syllabus and orders for the examination the candidate can ascertain what parts of the books may be omitted. Now let him *read* each book through, say twice, but not make any attempt to *learn* the contents.

Let him then get a good book of "questions and answers" on each subject and work through them steadily, only using the books of reference allowed in the examination. *Let him mark the questions which he cannot do under examination conditions and write out those answers.* He should go through those questions again (without referring to the written answers), and he will find that the mere fact of having hunted up and written out those answers will have taught him many of them. He should then note the answers still wrong and repeat the above process. He will find, after having gone over the question three or four times, that he can answer practically any question on each subject.

To work up Organisation recourse must be had to the *Field Service Regulations* of one's own arm—the *Field Service Manual*, the various volumes of *A. R. I.*—Banning's or Brunker's "Organisation and Equipment" and some book giving details, omitted in the above, about the Imperial, Indian, and Colonial Forces and the systems of the English and Indian Headquarter administrations. An Indian Army officer should get details of the recruiting, promotion, pay, and reserves of his own arm in general and of his own unit in particular, instead of learning the details given for the British Army. There is much unnecessary matter in the *Field Service Manual*, and I found that

extracts of useful information from the entire book only occupied a sheet of foolscap. These extracts must be made from a corrected copy, a treasure not so easily obtainable. The Indices of the A. R. I. (indicating what subjects those volumes deal with) are the only important parts of those volumes. These books and the *Field Service Manual* can be borrowed from an office for the short time needed to make notes about them.

In order to learn Strategy let the candidate précis the "special campaign" and also two or three other well-known campaigns (*e.g.*, a campaign from James' *Modern Strategy*) illustrating various strategic points. Let him note the strategic points involved and, if he does not understand them, a reference to the same book will explain the difficulty. Let him then draw the maps, and write out the précis of the campaigns, and the notes on strategic points, from memory. Three or four repetitions of the above will suffice.

Having learnt the principles of tactics by reading the manuals and working through the book of "questions and answers," the candidate may now tackle tactical schemes. Such schemes are issued and corrected by the U. S. Institute. Simla and two of each kind (*e.g.*, attack of a position, advance-guard, rear-guard, outposts, convoy and frontier warfare, should be worked out. He will thus acquire some facility in dealing with tactical problems on maps, and in writing orders.

He must now do some "fortification schemes." If he has no friend to show him, let him get Shadwell's *Fortification Applied to Schemes*. This book also gives questions and answers on the *Manual of Fortification*. There are only, I think, two kinds of schemes possible, *e.g.*, the defence of a position and the defence of a port. He must work out one of each from "Shadwell," and correct his solutions by those in the book. Let him then work out one more of each kind remembering his previous errors and only using the *Manual of Fortification* as a reference. He will, I think, find that he can now "floor" the examiner.

When the candidate is getting to the end of his work on each subject, he should get the last examination papers and do the papers in the time and with the books allowed in the examination. If he cannot get the papers, he can set himself a similar number of questions from his books of questions and answers, and do these under examination conditions. He should similarly work out his tactical schemes under examination conditions.

Working through the books of "questions and answers" on tactics, topography and fortification will assist him in his *combined* examination in C. In addition to this C, he must know how to make a section on the ground and how to make the sap, par bridges, kents, etc., with how to proceed up a slope, ground him accordingly with some tactical ideas, a ground him. This he can only learn practically by working on grass, etc., in the country, as I have described above. Officers of the Indian and British Armies, who are in C, a superb book dealing with his mastery in the field and in

barracks; the commoner diseases and their treatment; the aging and shoeing of horses.

I repeat again, see that the booksellers send the last editions both of the official and non-official books ordered. I have purposely not mentioned the books of questions and answers on tactics, law and topography as many such of much the same value are on the market.

If officers will follow the above advice, which I give from practical experience, I feel confident that they will have no difficulty in passing that modern bugbear, the promotion examination, with a minimum of expense.—*The Pioneer*, 3rd November 1905.

Artillery in Defence.

Lieutenant-General Sir John French has caused the following notes by Lieutenant-Colonel Du Cane, R.A., D.A.A.-G., of the Staff College, to be circulated to the officers of the Aldershot Army Corps on the subject of Artillery in Defence:—

"There are four things to consider in disposing artillery for defence—

- (1) Delay enemy's advance.
- (2) Artillery engagement with enemy's artillery.
- (3) Repelling the close attack of enemy's infantry.
- (4) Support of counter-attack.

(1) The enemy's advance can best be delayed by a few guns posted with a good field of fire, so that by sniping with a few rounds of rapid fire, laid direct, they can cause early deployment. These guns will probably draw the enemy's artillery fire from concealed positions. They must then be withdrawn, or they will be knocked out.

(2) The artillery engagement should take place from concealed positions. The defence can then refuse the deal or engage in it at will. In any case the guns of the defence can take advantage of a rashly exposed opponent, and the guns so disposed retain their mobility and can reinforce a threatened point or support a counter-stroke.

(3) Repelling the close attack of infantry raises the question as to whether guns that are originally in concealed positions can reach the crest to deal with an infantry attack. It is the experience of the Russians that they cannot do so in the face of modern fire-arms. It becomes, therefore, necessary to post some guns strongly entrenched in such positions that they command all avenues of approach at decisive ranges with direct fire. These guns should not open fire till the infantry attack develops, or they will be drawn into the artillery engagement, and in all probability rendered useless at the critical moment.

(4) The support of the counter-attack must depend on the commander's plan. It is always an open question whether a commander will wait to form his plan for counter-attack until the

enemy's main attack develops, or whether he will select the terrain most suitable for the counter-stroke and make his attack there whether it meets the enemy's main or holding attack. To secure artillery support of the counter-stroke in the first case is difficult. It will in all probability be best to retain a certain number of batteries in reserve with the general reserve and trust to their being able to find positions from which to co-operate. The second method allows us to employ the whole of our artillery in the early phases and to dispense with reserves. We can earmark certain batteries for the support of the counter-attack and reconnoitre suitable positions for them. Batteries that have been taking part in the artillery engagement in concealed positions can be withdrawn and ordered to occupy these positions in sufficient time to afford the necessary support to the counter-attack.

Dealing with the delivery of an attack, the same memorandum adds that in keeping down artillery fire concealment is everything and this will be the future condition of the duel. Artillery cannot afford close support to infantry from distant ranges. A feature of modern battles is certainly their long duration, and the Japanese method appears to have been to push in all the enemy's advanced troops and feel his position on the first day. They have then selected their objective for the main attack and moved the assaulting infantry and supporting artillery into position at night. In this manner they have been able to import the element of surprise into the main attack, which seems so essential in the face of modern fire-arms. *The Pioneer*, 29th November 1905.

▲ Remarkable Colonisation Scheme.

The rumour that the Russian troops now in the Far East are to be left there receives striking confirmation from the announcement of a remarkable project for colonising that outlying region by settling there the troops of the Manchurian Army. The *Asiatic* says that such a project is being worked out at present in the Department of Land and Agriculture and that the Government is considering the question of colonising the Amur Territory, the Maritime Province running northwards from Vladivostok, the Government of Irkutsk and the region of the Steppes by means of the Reserves and discharged soldiers now serving with the colours in Manchuria. The private soldier is to have the right, within one year of joining the Reserves of settling in the Far East. He will be conveyed thither free of cost and he will be allowed to choose any site and get 42 acres of land which will be given to him without payment. Such settlers will be exempt for life from payment of either Government or Zemstvo taxes, each man will receive from the State the sum of £10 12s. 6d. towards his expenses and a further sum of £42 10s. within the next three years. The officers of the Manchurian Army, with the exception of the higher officers, will be

granted freely from 550 to 1,100 acres of land, and they must bind themselves to build a house and belongings on the land within five years. During the five years the land will be free of all taxes, and not liable to be sequestered. It is believed that 100,000 families would be settled in the regions referred to within five years. The project looks all very well on paper. But behind it can be seen the wish of the Bureaucracy to have a large body of Reserves ready at hand in the Far East, and also near the Orenburg and Tashkend Railway, and at the same time to keep the disaffected soldiery away from European Russia. Russia's previous experiments in this direction have been failures, especially in the case of parcelling out the Bashkire lands in Orenburg and along the Black Sea coast-line, while, with few exceptions, the best pieces of land in Siberia have been taken up already, and the unappropriated portions are either too marshy or too waterless to be worth cultivation. In the last fifty years only 150,000 settlers have been settled in the Amur and Coast Province Territories. Thus it is not at all likely that the colonisation of Asiatic Russia will be carried out so successfully and so quickly as the authorities seem to think will be the case.—*Morning Post*, 11th November 1905.

PRÉCIS OF FOREIGN MILITARY PAPERS.

FRENCH PAPERS.

BY CAPTAIN A. S. H. TEED, 14TH JAT LANCERS.

REVUE DE CAVALERIE.

July and August.

The July number contains an account of Turenne's campaign in Upper Alsace in 1674-75. His remarkable success against superior numbers was, in the opinion of the writer, largely due to the vacillating character of his opponent, the Elector of Brandenburg, who, rather than assume the responsibility of directing movements himself, had recourse to frequent Councils of War, at which he was quite unable to enforce his authority. The interest of the article is somewhat marred by a lengthy discussion into which the writer enters on the subject of the topographical changes that have taken place in the theatre of operations since Turenne's day.

The series of articles dealing with the effect of the two years' service law on the training of the cavalry soldier is continued in the July and August numbers of the *Revue*. The writer proposes several methods of overcoming the difficulties which are experienced by squadron commanders and instructors in turning out efficient cavalry soldiers more quickly than was necessary when three years were spent in the ranks. Amongst other reforms he advocates the further simplification of the carbine exercises, and recommends the virtual abolition of gymnastics and a considerable reduction in the number of dismounted manœuvres now executed by a cavalry regiment.

He insists that, from the day a recruit joins, every effort should be made to develop his intellectual faculties, to train, at the same time as his body, his memory, his powers of deduction, and his understanding, and to make him think for himself. Instructors should admit that each man has by nature a personality which it is their duty to develop; they must not be content with the superficial instruction of the mass, nor be satisfied with that unreasoning and machine-like obedience which they demand from a troop horse.

During the course of the article the writer frequently alludes to the importance of "individuality," explaining that no recruit is fit to be passed into the ranks until he is firmly convinced that, mounted or dismounted, he is an important unit in a force and that his well-considered, intelligent, and, above all, individual action alone can secure the success of the troop to which he belongs.

The writer laments the partial abolition of the lance in the French Army, but puts forward several proposals for utilising the

time thus saved to afford the men a more thorough instruction in the use of their remaining weapon, the sword, first on foot and then mounted. Stress is laid on the fact that cavalry in future will seldom charge knee to knee trusting to their weight to bear down their opponents. Especially when attacking infantry, files will be placed at intervals of several yards and good horsemanship and skill in the use of the sword is more necessary now than ever.

The instruction of the troop, the writer contends, possesses little difficulty if the intelligence of each individual member of it has been thoroughly developed beforehand. The two important points in either mounted or dismounted work are direction and pace. When mounted no man should look to his right or left for his dressing, but only to his troop leader, riding parallel to him, and at the same pace. The rear rank must be just as independent as the front and not allow their horses to carry them along in the wake of their front rank men.

The writer sums up by saying that the instruction given to young soldiers during the first few months of their training is only sufficient to ground them in the rudiments of their profession. They are not fully trained—far from it. Their recruits' course must be followed by a second training which lasts till they leave the service, and the more thoroughly this training is carried out the less likely is a soldier, after his return to civil life, to forget what he learnt during his two years in the ranks.

The August number contains an interesting account of the cavalry of the Revolution and Empire. The writer divides the history of the force into three periods—

- (1) The Formation—The cavalry of the Republic.
- (2) The Transition—The cavalry of the Consulate.
- (3) The Zenith—The cavalry of the Empire.

He refers to the difficulty experienced, after the Revolution, in finding officers with any experience or professional training. On the downfall of the Monarchy two-thirds of the cavalry officers left the country, and, although, in 1792, when the Revolutionary wars broke out, the ranks were quickly filled with enthusiastic recruits, the shortage of trained officers proved a serious obstacle to efficiency.

In 1793 a general conscription was ordered, and in 1794 the army was completely reorganised on the new system. Each infantry division contained from eight to twelve squadrons, there was no such thing as independent cavalry, and the army corps was as yet unknown. This latter organisation was employed temporarily during the Sambre-et-Meuse campaign of 1795 and shortly afterwards abandoned in favour of the old divisional system, army corps were again organised in 1800 and again abandoned, and it was not till the Boulogne concentration (1803–05) that they were finally constituted as integral portions of the “Grande Armée.”

In 1796 the divisional squadrons were taken from the infantry commanders and grouped together in brigades and divisions of

cavalry. The disadvantages of leaving infantry without any mounted troops attached to it were, however, perceived at once by Napoleon, and in his *Memoirs* he expresses a firm conviction that all bodies of infantry must be accompanied by some cavalry, though not necessarily a strong force, nor even a well-mounted one. The writer of the article, in agreeing with this principle, puts forward the suggestion that divisional cavalry in future should consist of reservists mounted on requisitioned horses, leaving the regular troops free to perform the duties of independent cavalry.

After the peace of Amiens Napoleon set to work to effect a complete reorganisation of the whole army and, amongst other innovations, constituted, not only brigades and divisions, but even corps of cavalry. He had thoroughly grasped the principle of employing cavalry in large masses, and gave to each branch of the arm the rôle which it was best fitted to fill. The heavy cavalry which had hitherto played a more or less humble part, because no one knew how to employ it, now acquired considerable importance. It was rearmed with the helmet and cuirass which had been abandoned for a century. It became, in fact, the element of "strength" on which the light troops were based when carrying out their distant raids and reconnaissances.

The main body of cavalry with the "Grande Armée" which consisted chiefly of "Heavies" was called the Cavalry Reserve. It was nominally under the command of Murat, but in reality was retained by Napoleon in such a position that he could employ it in a moment to turn the scale in a battle. The writer, in this connection, comments strongly on Napoleon's fatal error in centralising command. "Though one admires," he says, "the force of character and energy of this extraordinary man, who could grasp every detail without losing sight of the great object to be attained, one cannot help seeing that this centralisation of command was one of the causes of his downfall. When this superhuman activity diminished, through the failure of his physical strength, we see his generals, left to themselves, hesitating like children and unable to replace him."

The rôle of Napoleon's cavalry—the Jena campaign is taken as an example—was to push on ahead only far enough to allow the infantry room and time to assume battle formation, to secure its unimpeded passage over obstacles, and to maintain touch with it rather than with the enemy. In fact it was never allowed far from the direct personal supervision of the Emperor. It is true, the writer says, that when Napoleon became doubtful of the position of the Prussians, he detached Murat from Bernadotte, and started him off independently to ascertain what he could of the enemy's movements, but his instructions were so very detailed and the line of his advance and his objective so clearly defined that it cannot truthfully be said that in this campaign Napoleon was anticipating the present system of employing independent cavalry. Directly the enemy was located Murat was recalled and kept under the Emperor's immediate orders until the battle was over.

In an article dealing with the exploits of the German cavalry around Coulmiers in October and November 1870, the author remarks on the increased difficulties experienced by that arm during the later months of the year. He attributes them to the increased hostility of the inhabitants, and to the appreciation of the proper use of cavalry which was by that time dawning on the French.

The *lettres à Plok* are continued in the July number. The writer is a strong advocate of the échelon formation for moving large bodies of cavalry. He contends that the regulations do not take national proclivities into sufficient account, that manœuvring power is an essential characteristic of the French cavalry, and that compilers of instructions for work in the field should take into consideration the strong and weak points of the troops for whose benefit the works are produced. As an instance he cites the essential difference between the French and German cavalries. The latter are heavy, armed with lances, and have very little capacity for manœuvre. Their object, therefore, is to form line and charge home as soon as possible. The French cavalry, on the other hand, is light and armed with a sword. It should, therefore, endeavour to avoid a direct shock, and employ its great advantage to manœuvre round the enemy and strike his flanks or rear.

The "Souvenirs of General Faverst de Kerbach," orderly officer to General Ducrot during the Sedan campaign, is favourably reviewed in the July number of the *Revue*. The General comments bitterly on the slight use which was made of the French cavalry, and points out how the Prussians, though quite as ignorant as his countrymen in this respect at the beginning of the campaign, realised their mistake before it was too late and at once set about to rectify it.

An article on the training of the cavalry soldier for war contains a plea for the further decentralisation of command in a regiment, and the granting of greater freedom of action and responsibility to troop and section commanders. It also gives hints on stable management, the prevention of sore backs, methods of requisitioning supplies in war time, and in fact deals with everything that tends to help the cavalry soldier to look after himself either in barracks or on service.

REVUE MILITAIRE SUISSE.

July, August, and September.

In the "Problems of the Sedan Campaign" the writer deals with the hesitation and uncertainty that characterised MacMahon's movements throughout the operations—the letter from Bazaine asking him to meet him outside Metz, his start to comply with the request, his retirement, and his explicit instructions from Paris to advance again and proceed to Bazaine's relief.

The problems put by the writer are—

(1) If General Wimpffen had not interfered and countermanded the retirement could the French Army have carried out Ducrot's orders to fall back on Mézières?

(2) If the retirement ordered by Ducrot had not commenced could the force, as General Wimpffen contends, have broken through to Carignan?

An article on sports in the army advocates the encouragement of football as a healthy exercise, and contains a lengthy treatise on the subject of military gymnastics as practised in Switzerland.

The chapter on night operations in the English *Combined Training* is criticised in the August number. The article also gives an account of a night attack carried out by the Turks at Shipka on the 17th September 1877.

In the "Employment of Quick-firing Artillery" the writer lays particular stress on two points—That indirect fire should be the rule rather than the exception, and that the battery commander should be in a position personally to observe the effect of his unit's fire, giving his orders, if necessary, by telephone.

The rest of the article is too technical to be of general interest.

The writer of an article on "Bugle Calls and the Bayonet Attack" quotes the views of the two distinct schools of thought in France on the subject of the attack. The first, deriving its opinions from the lessons of the Boer war, advocates the employment of small parties of skirmishers at very wide intervals, while the second claims that success can only be obtained by lines in close order continually fed from the supports. The writer considers that wisdom lies in the mean between the two schools of thought, and that the Russo-Japanese war shows that we were in too great a hurry to adopt the tactics of South Africa. He sums up his article by saying that once the position of the enemy has been definitely ascertained the first line must be strengthened in order to give it a superiority of fire over the defenders, and that for the final bayonet attack the shoulder-to-shoulder line is the only formation.

During an action bugle calls tend to cause disorder and disorganisation; in fact they do more harm than good and should be abolished.

An article on the Field Artillery in Manchuria contains nothing very new. It describes the *matériel* with considerable minuteness and compares the regulations and the *moral* of the two belligerents.

Military cyclist corps in Italy form the subject of an interesting article. The writer gives the history of military cycling in Italy, the strength of cyclist companies, and a résumé of their regulations. These latter are described as being very complete and affording instruction in almost every subject likely to be of use to a force whose rôle is to follow and support the advanced cavalry.

GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR, STAFF CAPTAIN I.B.

Internationale Revue ueber die gesamten Armeen und Flotten (August, September, and Supplements):—The August number informs us that the French Minister of War has offered a prize of £80 for the best pattern of kitchen-waggon capable of cooking for a company. The waggon must be able to produce 66 gallons of soup and 13 gallons of coffee at the same time. It must be strongly built and yet must not exceed a total weight of 29½ cwt. so as to be able to follow troops everywhere.

The French appear to be paying great attention to the security of Indo-China. The delta of the Mekong is to be made into a naval base with a garrison of six European and eight native battalions and eleven batteries. Saigon is to be made capable of repairing ships-of-war. In Tonquin a second Port Arthur is to be created in the triangle Hanoi—Wapean—Seven Pagodas. The total garrison in Indo-China consists of 34,000 troops with the colours, capable of being raised to a war-strength of 46,000 men by calling out the reserves. To these figures must be added 11,000 Military Police. During peace the troops are grouped in brigades of two to three European and three native battalions.

From the September number it is apparent that the French War Minister is not at all satisfied with the present arrangements for training French Staff Officers. The period of training is to be considerably lengthened. It is also intended to approximate more nearly to the German system of dividing the staff duties so as to relieve the General Staff Officer, whom in India we should call the Art of War Staff Officer, from all routine duties. No orders have as yet been issued on this point, but reports have been called for. Attempts to find a new uniform, which will at the same time render the French soldier invisible on the field of battle and please the critical aesthetic taste of the Parisian populace, are still being made. The recent attempt to dress *à la "Brother Boer"* did not find favour with the people and had to be abandoned.

Italy is busy re-arming her artillery with the new Acciajo steel gun. The batteries will have six guns, seven ammunition waggons, one forge waggon and two carts. Three of the ammunition waggons will accompany the guns in the first line. The battery will have 144 rounds per gun, while the ammunition column and the corps artillery park each will carry another 100 rounds, thus making 344 rounds the total available per gun.

The Italian cavalry are being seriously instructed in the use of the carrier pigeon. It is intended that on the outbreak of war the

cavalry divisions should be supplied with pigeons from the nearest fortress pigeon-loft, of which there are 25 in the charge of the Fortress Engineers. The pigeons will be carried in a small cage like a knapsack on a trooper's back, and it is intended that two or three should accompany each patrol. The message sent will be written on thin paper, rolled up, and inserted in a quill, the ends of which are then sealed with wax, and the quill fastened under the wing. It is calculated that the pigeons will average 20 miles an hour in the flight back to their fortress lofts. The possibility of their practical use in war has been fully recognised in most continental countries, which impose restrictions on the import of pigeons, with the intention of preventing their training in peace time. As a rule a pigeon will only successfully find its way home along a route on which it has been trained. When first sent up and wheeling in the air it must be able to pick up points which it has previously seen and got to know, otherwise it is liable to be hopelessly lost, and only pick up the right direction for its flight by pure chance.

This number closes with a short review on mountain artillery. The Japanese, who in this matter, as in most others, were more thoroughly prepared than the Russians, were able to send some 70 batteries of these little guns, to which the Russians, despite their purchases in Germany, have been able to oppose only 26 batteries; it must, however, be remembered that the Russian is an eight-gun battery, while the Japanese batteries have, like ours, only six guns. After reviewing this branch in all the armies of the world the author comes to the conclusion that Germany, in this respect, is most behindhand.

German Supplement No. 65 and several of the numbers of the *Militär Wochenblatt* under review deal with the employment of telegraphy, and especially wireless telegraphy, in war. The use of the insulated cable and the formation of regularly trained detachments of military telegraphists has much facilitated the use of this means of communication. In the late Russo-Japanese war the use that has been made by both sides of optical signalling, telegraphy, both wireless and connected, and of telephones has been remarkable. The strides made of late years in obtaining satisfactory results from wireless telegraphy have been very great.

It is said that the new German cart apparatus for wireless telegraphy can be worked by four men and does not require more than ten minutes to set up. The German wireless telegraph detachments have been employed with great success in the present operations in South-West Africa. Despite the untrained personnel and the poor equipment these detachments maintained themselves in the field and kept open communications in a hilly country at an average elevation of 3,000 feet with stations from 50 to 110 miles apart. Five stations have maintained communication over 380 miles of most difficult country. For short periods messages over a distance of 140 miles have been read, but these long distances are much more difficult to deal with satisfactorily than the medium ones. It must, however, be

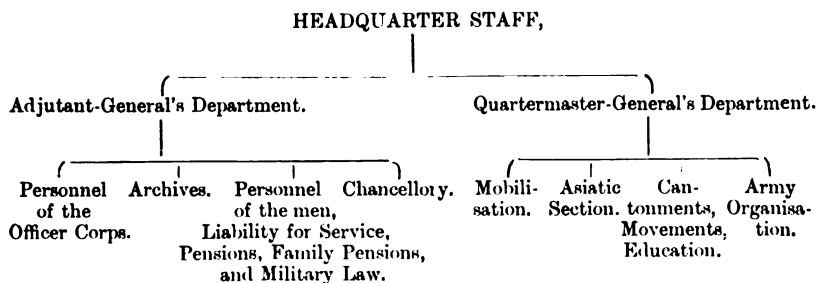
remembered that the enemy had no means of causing electrical disturbances and thus interfering with the working of the apparatus as could have been done by a civilised opponent, so that the Germans had only natural electrical storms to contend with in addition to the difficulties produced by their hastily organised material. The Germans were also secure in the fact that their messages could not be intercepted by their unscientific enemy, and consequently were free from the troubles caused by the use of ciphers, which would be essential in war against more civilised opponents.

Perhaps the most interesting use of wireless telegraphy is that now being organised in Brazil. The Indians inhabiting the forests of the Amazon valley will not permit the running through their country of telegraph wires. The wireless system solves this difficulty, and the Governments of Brazil and Peru are now making a trans-continental wireless installation in conjunction with their existing land lines, so as to connect Puerto-Bermudez, Iquitos, Manaos and Para.

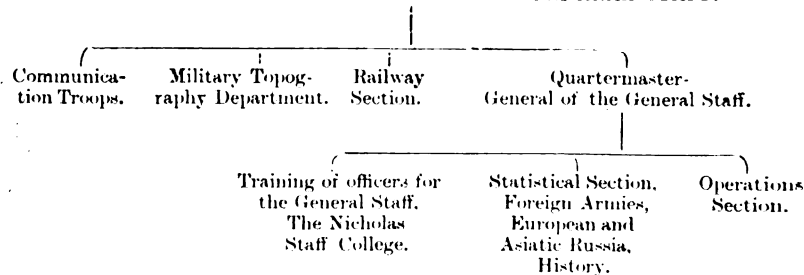
Supplement No. 66 details the reforms in, and reorganisation of, the army of Greece. The principal reforms are the introduction of a proper General Staff system and the formation of a special Finance Board to regulate military expenditure, consisting of the Prime Minister, the War Minister, the Finance Minister, the Commander-in-Chief, and the Chief of the General Staff.

Militär Wochenblatt (Nos. 90—113 and Supplements 8—9).—Number 101 gives the new Russian Staff organisation. Russia has at last adopted the principle of a General Staff by an order of the Czar, dated 21st June of the current year. The first "Chief of the General Staff" is Lieut.-General Palizyn, lately Chief of the Staff of the Inspector-General of Cavalry. He commenced his soldiering career as an infantryman in the 2nd Life Guards Rifle Battalion in 1868. He passed the Nicholas Staff College very young, for he was nominated a Captain of the Staff at 26 years of age. During the Russo-Turkish war he was "Field Adjutant" of the 1st Guard Cavalry Division. With the exception of one year, during which he commanded a battalion of the Guard, the whole of his service has been passed on the Staff of the Guard Corps or in the St. Petersburg Military District.

The following trees will show the new organisation of the Russian Staff:—



DEPARTMENT OF THE CHIEF OF THE GENERAL STAFF.



Count Wrangel has an interesting article in No. 107 criticising the causes of the Japanese success in the late war. While fully recognising their self-sacrificing and patriotic courage, the completeness of their organisation and of their previous preparation for the war, which they foresaw must come, and allowing in every way for the difficulties which beset the Russians, Count Wrangel considers that the principal cause of their continual success has been the patient faith of the Japanese nation in its leaders, which has given their armies continuity of command, and to the leaders themselves the unchangeable determination to carry out their plans through all difficulties to a successful *finale*. The Russian leaders, on the other hand, had to face intrigue among their superiors at home and discontent among their men on the field of action with the knowledge that even partial failure meant professional ruin. This sense of insecurity was principally responsible for the hesitation and lack of initiative of the Russian leaders, and it combined with the woeful breakdown of their intelligence service to place in the hands of the Japanese Generals the opening moves of every important stage of the war. The reason for this Japanese advantage is to be found in the home-life of the nation. There the soldier has always occupied the most honoured position, and most of the best and most able men have consequently preferred military to civil life, with the result that the nation can have implicit trust in its military leaders.

The next number gives an interesting comparison of some experimental shooting between a machine gun and a squad of 50 riflemen, in which the writer comes to the conclusion that the fire-effect of one machine gun is about equal to that of this number of rifles.

A short account of the Wetzler range-finder is given in No. 113 ; this instrument is a prism worked somewhat on the lines of the well-known Weldon.

The two supplements under review contain a very detailed criticism of Napoleon's tactics in the battle of Bautzen and of the strategical movements which preceded the battle. It was at Bautzen that the Emperor felt for the first time the want of co-operation in his Corps Commanders, which was to be his undoing at the end of the Hundred Days.

RUSSIAN PAPERS.

BY LIEUT. G. L. BLAIR, 36TH SIKHS.

(Russki Invalid, 20th October 1905.)

"Is it necessary to double the Siberian line?" A statement has appeared in the Press to the effect that now the war has come to an end it is proposed to abandon the idea of laying a second line of rails and merely to add a large number of new sidings. Can this be true? If so, it is from the point of view of the state a most unsound scheme, though it may bring grist to the mill of those who wish to make the period of construction as long as possible.

"If you wish for peace, prepare for war." The ratification of the Treaty of Peace has been anything but quietly received in Japan, and it is only when we are in a position to rapidly mobilise a great army against the Japanese that we shall be able to turn our attention to the peaceful development of our Eastern possessions, with any sense of security. When we built the trans-Siberian line we made great mistakes, from motives of economy, *viz.*, long runs of 30 miles and light rails, and we resigned ourselves to a pace of 20 miles an hour and a total of 7 pairs of trains per diem. The light rails were changed as soon as the line began to work, when the unbearable inconvenience of the slow pace became apparent. The average distance between stations had to be reduced as well, to enable more trains to be run to cope with the traffic which, passenger and goods alike, greatly exceeded expectations.

The war caught us reconstructing the line to meet this increased traffic and the idea of doubling it came up. This would have made it possible to run 40 to 50 pairs of trains a day. The half-measure actually adopted during 1904 of building numerous sidings increased the railway's capacity, first to 14 pairs and, by September 1905, to 20. The longest distance between stations seems to be reduced now to about 14 miles. Under these conditions troop trains can do 200 miles per diem. This slowness is not so surprising if we remember how frequently troop trains have to stop to let the men get their food, or hot water for tea, to allow horses to be watered, etc. Our troop trains too are merely trains of goods trucks without any latrine arrangements, which again increases the halts. Trucks are unsuited to rapid travelling and have to be frequently inspected for heated axles, etc.

Two hundred miles a day does not allow for halts of a day at a time, which are absolutely necessary if the journey is over two or three days, to avoid exhausting the troops. Sleeping in jolting trucks is very uncomfortable, clothes must be washed, the men must bathe, and horses must be exercised to keep them fit. Detachments actually take 40 days from Moscow to Harbin.

To turn to the number of trains the military authorities can reckon on per diem. The building of the railways caused the abandonment of the old system of road transport in Siberia, and the inhabitants are now dependent on the line for the necessities of life. It is for this reason that only half the 20 pairs of trains is available for military work ; the others are employed, two for passenger traffic, four for goods and four for railway repair material. The 10 pairs of military trains include trains with supplies, so we are forced to the conclusion that six battalions of infantry or six batteries of artillery is the daily maximum that can be carried.

More stations will mean more stoppages to take up passengers and will increase the total time from Moscow to Harbin without giving us many more trains daily. The cost of new stations, extra staff and more sidings is certain to be considerable. If the necessity of building new bridges is held to stand in the way of doubling the line, the single track bridges might for the moment be left as they are and used for the double line. The new line from Tumen to Omsk is very much in the air, and even when it is built the trans-Siberian will require two sets of rails.

The military authorities ought to insist on the doubling, and the whole country would benefit by it commercially. The line is at present the only link between the centre of Russia and the Pacific coast. In the same way as the Moscow-Petersburg line feeds the northern capital, the trans-Siberian pours furs, grain and butter into Europe. A flow of European goods to Siberia is also to be expected, and we may well find ourselves carrying across the troops of European powers which have colonies in the Far East.

The double track would enable us, after allowing 10 or 15 trains for the wants of the line and of the population, to send four regiments (16 battalions) to the front daily. Drafts could be forwarded to the number of 25,000 or 30,000. The time occupied in transit would be reduced to from 25 to 30 days—a very considerable gain. If one line broke down, traffic would continue and repairs could easily be executed. If we had had a double line we should never have been compelled to burn the stores at Mukden ; trains running north on both lines simultaneously could have cleared away everything worth saving.

FOREIGN LANGUAGES AT THE RUSSIAN STAFF COLLEGE.

(*From the Russki Invalid*, 5—18th October 1905).

An order issued in September laid down new regulations for the study of French, German and English at the Nikolaïfski Academy of the General Staff. Officers, it appears, can take up any two of the above or all three. Officers completing their course must be able to translate freely from the foreign language into Russian without a dictionary, the pieces set to be of a military character. No student will be allowed to pass to the complimentary course who fails to obtain the qualifying minimum in languages. The order concludes with a warning that no leniency will be shown in the final

test, nor will excellence in other subjects be allowed to compensate for failure in languages. These regulations are not to apply to students already in residence.

A DEFENCE OF THE RESERVE TROOPS IN MANCHURIA.

(*Russki Viedomosti.*)

In view of the numbers of Reserve troops (*i.e.*, whole units formed of reservists on mobilisation) which would be employed in any European war, the behaviour of the Russian Reserves in Manchuria is of the greatest interest. They differ from those of most other armies in that in Russia weak cadres exist in peace time: they are expanded by Reservists to war strength on mobilisation. It is usual to draft the older men into these units, the younger going to complete the "active" regiments. For the Japanese war three complete Reserve Army Corps were formed, the Fourth, Fifth and Sixth Siberian, drawing their men from the Siberian Military District, Kazan and Moscow respectively. The Fourth particularly distinguished itself throughout the war, especially at Liaoyang. The Fifth was engaged on the same occasion, and it is on the unsteadiness of this Corps that the impression that the Reserve troops have generally been failures is mainly based. It reached Liaoyang on the eve of the battle and was marched straight from an exhausting journey of thousands of miles in railway trucks into action. General Orloff's division came under a heavy fire from both Russians and Japanese, suffered severe losses and retired in confusion. Under the circumstances an active division would probably have done no better.

The Sixth Siberian Corps reached Mukden at the end of September, and on October the 14th one of its brigades was ordered to cover the withdrawal of the 17th (Line) Army Corps, an operation it carried out successfully. Three brigades of the Sixth Siberian were engaged in repelling Oku's attempt to turn the Russian right flank. After two days' heavy fighting the Corps took the offensive and captured an important advanced position. The Sixth was the only Corps that was not compelled to give ground in that day's fighting, and it was to the success it secured that the Russian Army owed the subsequent capture of One Tree Hill.

Later a division of the Sixth extricated the 1st (Line) Army Corps and secured its retreat.

The writer concludes that these facts, especially the success gained over so formidable a force as Oku's army, prove that Reserve units, properly led, are fully capable of taking their place in the fighting line, and that too much importance has been given to the unfortunate incident of the Fifth Corps' retirement at Liaoyang.

TACTICAL SCHEME COMPETITION, APRIL 1905.

There were 62 candidates, of whom only 35 competed.

Major C. E. Macquoid, D.S.O., *nom-de-plume* "Rem acu tetigisti," has been awarded the prize of Rs. 50 as the winner of this competition.

For the information of the competitors, the winning solution is published verbatim (with a sketch of map B) on the following pages.

The *noms-de-plume* of competitors are given below for the information of those concerned :—

- | | |
|---------------------------------|-------------------------------|
| 1. "Patrol." | 19. "Om mane padmi hum." |
| 2. "Cruachan." | 20. "Fide sed Vide." |
| 3. "Punjabi." | 21. "Heron." |
| 4. "Ego Accedo." | 22. "Daniel." |
| 5. "Ruddigore." | 23. "Fiducia." |
| 6. "Res non Verba." | 24. "Prodesse quam conspice." |
| 7. "Juste Millien." | 25. "Monk." |
| 8. "Merebeinur." | 26. "Banzai." |
| 9. "Lock Sicker." | 27. "Che sarà sarà." |
| 10. "Vincit amor patriæ." | 28. "Venturi non Inmemor." |
| 11. "Wa Guru ji ka Khalsa." | 29. "Turkenagh." |
| 12. "Rem acu tetigisti." | 30. "4809." |
| 13. "Facta non Verba." | 31. "Kia ora." |
| 14. "Skibbereen." | 32. "Fiat Lux." |
| 15. "Intus si recte ne labora." | 33. "Lux Vita." |
| 16. "Vivit post funera Virtus." | 34. "Esto quod esse Videris." |
| 17. "Virtute et Fortuna." | 35. "Black Dog." |
| 18. "Tactics " | |

WINNING SOLUTION by Major C. E. Macquoid, D. S. O., 20th
Deccan Horse, Inspecting Officer, Imperial Service Troops.

APPRECIATION OF THE SITUATION.

The season of the year is winter, when the sun sets early: the "terrain" is mountainous. It will therefore be cold, and the higher peaks, if not the valleys also, will probably be covered with snow. The distance I have marched with the brigade under my command is not given in the data, but it being already evening, when I arrive at NAHUN, and the climatic conditions being presumably as above described, I decide upon camping for the night at NAHUN, taking all necessary precautions for the safety of the camp.

My orders being to cover the rear and communications of our main forces, and those communications, running as they do by a single cart road along the valley of the KARPAN, which valley is

commanded by the heights on the west, it is evident that the occupation of those heights, as well as the roads and tracks, leading over them into the KARPAN valley, must be denied to the enemy. I must take up a position facing west, from which it follows that my tactical front will be one parallel to the line of communications I have to defend. The roads and tracks, which lead into the KARPAN valley, and their facilities for the passage of troops and transport are described in the data, and need not therefore be repeated here.

The data states that there is no cross-country communication between the roads described, nor between them and the position of the main Red Army, but it must not on that account be assumed that Infantry in open formation cannot pass from point to point, along the ridges, and this fact must not be overlooked. Inquiry from the inhabitants of NAHUN proves that the country shown in the map can be traversed by mountaineers and that regular Infantry in extended order could also pass from point to point along the ridges and more gentle slopes. Including assistance which may be afforded me by Green troops, three alternatives present themselves for choice:

1. Occupy the KASHNERA PINDA and BAJKANDA passes, and the ridge connecting these passes, denying the occupation of the ridge and the use of the passes to the enemy up to the last possible moment. Green troops to fight a delaying action in DIMA NUDDEE valley, retiring and co-operating with me in defence of passes.

2. Occupy the heights with my own troops in the angle contained by the two routes which unite between LANJ and BADAL so as to fall on the flank or flanks of any force advancing by either or both routes, asking Green forces to fight a delaying action in the DIMA NUDDEE valley, then retiring on and defending the ridges, and if compelled to fall back thence to retire along heights north of the BAJKANDA-LANJ track and defend KASHNERA PINDA, NAL MARGE, DEWRI DHAR and NAHUN track, and heights south of that track.

3. To leave the defence of the whole country west of a line due north and south of BADAL to Green forces, confining myself to an action in the valley between NAHUN and BADAL, in the event of Green forces being unable to hold their own in the sphere allotted them, but asking Green forces in that event to be responsible for the NAL MARGE—DEWRI DHAR track, and to deny to the enemy the occupation of the heights immediately overlooking the KARPAN valley.

Of these three alternatives, the first appears to me best, because if eventually driven from the passes, I can still act somewhat on the lines suggested in 2 and 3, and my defence will be more prolonged. Time is a decisive factor.

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A study of the map discloses the fact that the two passes are only two miles in a bee-line from each other. From native information on the spot, I find that, in spite of it being winter, mountaineers can traverse the ridge along its entire length. The two passes, therefore, are not entirely cut off from communication with each other. This ridge, which also prolongs itself north and south of each pass, is narrow with bare steep slopes falling to west and east, these slopes being cut up somewhat by nullahs and the sources of streams which fall respectively into either valley. A good view and good field of fire is obtained.

Consequently I determine to make my dispositions for the protection of the line of communications *viâ* the KARPAN valley according to that briefly outlined in alternative No. 1.

Until I have received some definite information as to the movements of the enemy, it appears to me imprudent to concentrate the whole of my force at either pass, nor yet to divide my troops between the two passes. The best plan will be to march the brigade early in the morning of the 22nd to BADAL, the point where the road bifurcates to the two passes, and thence to send forward advance parties to the two passes, to watch the roads, reconnoitre beyond the passes and to commence and complete such works for the defence of the passes as may be possible with the tools and materials available, holding the remainder of the brigade in reserve at BADAL, ready on the receipt of sure information to support these advanced parties at either or both passes, as the case may be.

Having reached this conclusion, the next point for consideration is the respective strength and composition of the two advanced parties, which I intend to detail, to occupy the KASHNERA PINDA and BAJKANDA passes.

The composition and the strength of the advanced parties will in the main be governed by the nature of the two roads which lead over the two passes.

The road from CHUWAI over the KASHNERA PINDA pass being a road passable by wheeled traffic, while the other is not, it may be taken for granted that if the enemy advance in strength, especially if accompanied by Field Artillery, he will select that line of advance, at any rate for his main attack. Taking the Artillery first, I cannot use my Field Battery on the BAJKANDA pass, as I cannot get it there. For the same reason, any Field Artillery which the enemy may employ against me will approach, not *viâ* the BAJKANDA, but by the KASHNERA PINDA pass. Since my Field Artillery can only be employed on the latter pass, it may as well go there at once, select a position, and as far as possible entrench itself. I have two Mountain Batteries, and as it is unlikely that the enemy will entirely neglect the BAJKANDA route, I send one Mountain Battery there. The second Mountain Battery I send to

NANUKANDA. This peak is an important point ; its possession by the enemy would turn my whole position.

As regards the Infantry, one battalion to either pass will meet the present demands of the situation ; this leaves two battalions in reserve at **BADAL**.

As regards the Cavalry, the whole of the country which lies between the **DIMA NUDDEE** and **KARPAN** valleys appears from the map to be unsuitable for Cavalry. The line of communications, running as it does through territory of an ally, will be safe, and assuming connecting posts to have been established along the route between our main force and **NIRMAND**, I cannot do better than push my Cavalry forward into the **DIMA NUDDEE**, where they can act as a support to such Green troops as may be co-operating in the valley, can confirm such news as may be brought in by Green patrols, and can assist in fighting a delaying action in that valley. The **BAJKANDA** pass route being only a track, it will be inadvisable to push more than $\frac{1}{2}$ squadron along that route, 1 squadron into the **DIMA NUDDEE** valley *via* **KASHNERA PINDA** pass, the remainder of the cavalry ($\frac{1}{2}$ squadron) being detailed as personal orderlies to self, one section at each pass, and one Field troop with the reserve at **BADAL**.

The disposition of the brigade under my command on the 22nd February will be as follows :—

At **KASHNERA PINDA** pass :

Commanding Lieutenant-Colonel A.

1 Section Cavalry

The Field Battery, R. F. A., at **KASHNERA PINDA** pass.

No. 2 M. B. R. A., at **NANUKANDA**.

No. 1 Battalion at **KASHNERA PINDA** pass with pickets on **NANUKANDA** and peaks 8,952 and 9,599 north of pass.

At **BAJKANDA** pass :

Commanding Lieutenant-Colonel B.

1 Section Cavalry.

No. 1 M. B. R. A.

No. 2 Battalion with pickets on peak 9,598 south and peak 9,133 north of the pass.

In **DIMA NUDDEE** valley :

1½ Squadrons Cavalry.

At **BADAL** in reserve :

1 Field Troop Cavalry.

No. 3 Battalion.

No. 4 Battalion.

Baggage.

The distance approximately from BADAL to either pass is four miles. This distance the battalions in reserve at BADAL could, on the flat, and under normal conditions, cover in an hour. But the climb from BADAL to either pass is approximately 4,500 feet. It would therefore be as well to allow two hours for the troops to cover the distance, get into position, and recover their wind. This question of the time it will take to march from BADAL to either pass must not be overlooked by me, should I have occasion to call upon the battalions in reserve to reinforce the troops in position at the passes.

Signalling communication will be established along the line of front indicated in the above disposition of the troops and in rear to BADAL and NAHUN: also if possible along the valley of the KARPAN, north to our main force, and south to NIRMAND.

The Principal Medical Officer will commence all necessary preliminary arrangements.

The Supply and Transport Officer in co-operation with Green local civil officials will collect such supplies of food and fodder as may be available.

I decide not to occupy the village of DOHU as an advance post, with my own troops at any rate. If turned out of this village, a retirement up the road and bare slopes back to the pass will be costly, and might have a discouraging effect on Green forces co-operating with us. I should prefer to destroy the village, so as to prevent it being used by the enemy as a tactical pivot from which to continue a further advance. But I have no Engineer Company nor Pioneers, and if the houses of the village are of the usual solid construction, they could not be effectually destroyed by my Infantry. If the Officer Commanding Green forces likes to occupy this village with his own men, I should raise no objection.

Proposals for co-operation which I would make to Officer Commanding Green troops:

Immediately on arrival at NAHUN, on the 21st February, I should make inquiries as to the whereabouts of the Officer Commanding Green troops, and if it were possible to get a letter to him that night. Assuming that I could get a letter to him that night, I should write to him to the following effect:—

1. Inform him of my presence at NAHUN in command of troops. I should not state the strength of the forces I command, nor even the reason of my presence that night at Nahun, for fear the letter should fall into wrong hands.

2. I should ask if it would not be possible to arrange an interview for to-morrow, the 22nd.

A copy of the letter in vernacular should be sent with original in English.

My own ideas as to the best manner in which Green troops should co-operate with me are as follows:—

(i) Green Irregular Horsemen to be sent forward on all possible lines of advance of the enemy in order to gain contact with him, observe his movements and send in early information as to same.

(ii) Green Infantry also to be sent forward, as soon as the enemy's movements can be estimated, in order to delay his advance as much as possible. I should point out that this can best be done, not so much by a direct and passive defence, barring his line of advance, as by harassing his flanks and rearguard, disturbing his camp or bivouac at night, and by attacking his convoys of supply. Should the enemy persist in his advance, then the Green Infantry should gradually retire on to the KASHNERA PINDA-BAJKANDA ridge, where, together with my troops, a determined resistance can be made. I should point out the advantages of the position, and the numbers and position I think Green troops had better take up thereon (*vide* operation orders).

As to Green Artillery, I think they had better at once take position on the ridge and entrench. At any rate his Field Batteries should; his Mountain Battery might accompany his Infantry. The Officers Commanding Green Batteries might not be above accepting such assistance and instruction as my own gunners may have time to give them. Ranges at any rate can be taken, etc.

(iii) I should ask Officer Commanding Green troops to request Green civil authorities to render all assistance in the matter of furnishing supplies for my own forces.

(iv) In order to facilitate the lateral communications of my own and Green troops, I should point out how advantageous it would be, if behind and parallel to the NANUKANDA, KASHNERA PINDA and BAJKANDA ridge a track could be cut; I should ask Officer Commanding Green troops if he could furnish any men from the villages in the neighbourhood and tools for this purpose.

(v) In order to facilitate correspondence, and to keep in close touch with each other, I should offer the hospitality of my head-quarter camp to any officer of his troops whom the Officer Commanding Green troops may select to be attached to my staff. I would suggest an officer of my own staff being attached to his camp.

In my interview with Officer Commanding Green forces, I would refrain from asking him in the first instance what his ideas as to the co-operation of his forces might be, as this would lead to a direct reply, and his dispositions might not suit my own plans, whence discussion and argument would ensue. Dwelling on his known abilities as a commander, I should assume his dispositions to be such as I have described. Thus will he be more likely to fall in with my ideas, or, at any rate, meet me half way. Both by my manner, and my conversation, I should flatter him as a soldier; I should praise the bearing of his "entourage" as well as the discipline and courage of his troops, etc., etc. It is all important that the Officer Commanding Green troops should be treated by me with deference, and as an equal, not as an inferior.

Operation orders by Brigadier-General X, Commanding, BADAL
23rd February 1905.

1. The enemy is reported in force advancing against the KASHNERA PINDA pass: hostile forces are as reported to be moving up the BAJKANDA pass. Green forces are co-operating with us. Their numbers are approximately 1200 Infantry, 250 Horsemen, one Mountain Battery and two Field Batteries. Green Infantry and Horsemen and Cavalry (1½ squadrons) are delaying enemy's advance in the DIMA NUDDEE valley. Green Artillery is in position on the KASHNERA PINDA and BAJKANDA ridge. Our main army maintains its position north of NAHUN.

2. I intend, in co-operation with Green troops, to defend the KASHNERA PINDA and BAJKANDA passes and the ridge connecting these passes.

3. The troops now at KASHNERA PINDA and BAJKANDA passes will maintain their present positions under command respectively of Lieut.-Colonel A and Lieut.-Colonel B.

The Reserve now at BADAL will move as follows:—

½ No. 3 Battalion to KASHNERA PINDA pass.

½ No. 4 Battalion to BAJKANDA pass.

Each half Battalion will be accompanied by its proper proportion of obligatory transport.

1 Field Troop of Cavalry

½ No. 3 Battalion

½ No. 4 Battalion

 } To remain at BADAL ready
 } to move on receipt of orders.

4. In the event of Green troops, now operating in the DIMA NUDDEE valley, being compelled to fall back on our main position, they will come into line as follows.

Infantry four hundred men on the section NANUKANDA to KASHNERA PINDA pass.

Five hundred men on the ridge connecting the KASHNERA PINDA and BAJKANDA passes.

Three hundred men at peak 9133 north of the BAJKANDA pass. Cavalry will concentrate at BADAL.

Artillery—the 2 Field Batteries are at the KASHNERA PINDA pass.

One Mountain Battery is on the ridge connecting the KASHNERA PINDA and BAJKANDA passes.

5. Such baggage of the force as is now at BADAL will remain there stacked ready to load up and move off on receipt of orders.

Baggage.

Medical.

6. The Principal Medical Officer will complete medical arrangements necessary.

7. The Brigade Supply and Transport Officer will forward two extra days' rations for men and animals to the passes, to be stacked in places, which will be shown him by the Officers Commanding at the passes.

Supplies.

8. Officers Commanding at the passes will make their own arrangements for the water-supply of the men and animals under their respective commands.

Water.

9. All reports will be sent to the two peaks 9,598 and 9,599, on each of which headquarter signalling posts have been established.

Position of G.O.C.

Copies to O.C. Units and Reserve.

Issued at 7 A.M.

(Signed)

MAJOR,

D.A.A.-G., Brigade.

TACTICAL SCHEME COMPETITION.

JANUARY 1906.

References to map which will be supplied on demand.

GENERAL IDEA.

Punitive operations have been undertaken by the British Government against the MAHSUDS and DARWESH KHEL WAZIRS. The expeditionary force is in occupation of the two principal villages MAKIN and KANIGURAM. The tribesmen after suffering defeat in several engagements have fled to the hills and valleys to the west of MAKIN and KANIGURAM. The tribesmen are well armed with B-L rifles.

SPECIAL IDEA.

On the 10th May at MAKIN, Colonel X receives the following orders from the C. S. O. Expeditionary Force:

1. The enemy has a rifle and ammunition factory at MAZALDIN.
 2. Colonel X will take command of the force detailed in the margin and surprise the village of MAZALDIN. The capture of the workmen and destruction of the manufacturing plants is of the greatest importance.
- * Coy S. and M.
No 3 Mountain Battery.
1st Sussex Regt.
1st N. I.
2nd N. I.
100 Gurkha Scouts.

3. The force will move as light as possible.

2nd reserve ammunition will not be taken.

Required as Staff Officer to Colonel X.

1. A brief appreciation of the situation giving in conclusion an outline of the suggested plan of action.

2. A calculation of the transport required, and the length of column on the march.

3. Write such orders as would be required for the execution of the plan on the lines suggested by you, up to the occupation of MAZALDIN. You may assume that the enemy's action does not interfere with your plan.

For the purpose of this exercise MAKIN.

Intend your competitors to be told that you intend to be Secretary of the Institute, and to be the subject of the following questions, and to be expected to answer them in a paper, together with their solutions.

This competition will close on 1st June 1906. Solutions received after that date will be treated as "LATE" for adjudication.

United Service Institution of India.

PRIZE ESSAY GOLD MEDALLISTS.

- 1872...ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873...COLQUHOUN, Capt. J. A. S., R.A.
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 1891...CARDEW, Lieut. F. G., 10th Bengal Lancers.
 1893...BULLOCK, Maj. G. M., Devonshire Regt.
 1894...CARTER, Capt. F. C., Northumberland Fusiliers.
 1895...NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.
 1896...BINGLEY, Capt. A. H., 7th Bengal Infantry.
 1897...NAPIER, Capt. G. S. F., Oxfordshire L. I.
 1898...MULLALLY, Maj. H., R.E.
 CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).
 1899...NEVILLE, Col. J. P. C., S.C.
 1900...THUILLER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901...RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.
 1902...TURNER, Capt. H. H. F., 2nd Bengal Lancers.
 1903...HAMILTON, Maj. W. G., D.S.O., Norfolk Regt.
 BOND, Capt. R. F. G., R.E. (specially awarded a silver medal).
 1904...MACMUNN, Maj. G. F., D.S.O., R.F.A.
 1905...COCKERILL, Maj. G. K., Royal Warwickshire Regt.

MACGREGOR MEMORIAL SILVER MEDALLISTS.

- 1889...BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
- 1890...YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
- 1891...SAWYER, Maj. H. A., 45th Sikhs.
RAMZAN KHAN, Havildar, 3rd Sikhs.
- 1892...VAUGHAN, Capt. H. B., 7th Bengal Infantry.
JAGGAT SINGH, Havildar, 19th P. I.
- 1893...BOWER, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).
FAZALDAD KHAN, Dafadar, 17th B. C.
- 1894...O'SULLIVAN, Maj. G. H. W., R.E.
MULL SINGH, Sowar, 6th B. C.
- 1895...DAVIES, Capt. H. R., Oxfordshire L. I.
GUNGA DYAL SINGH, Havildar, 2nd Rajputs.
- 1896...COCKERILL, Lieut. G. K., 28th Punjab Infantry.
GHULAM NABI, Sepoy, Q. O. Corps of Guides.
- 1897...SWAYNE, Capt. E. J. E., 16th Rajput Infantry.
SHAHZAD MIR, Dafadar, 11th B. I.
- 1898...WALKER, Capt. H. B., Duke of Cornwall's L. I.
ADAM KHAN, Havildar, Q. O. Corps of Guides.
- 1899...DOUGLAS, Capt. J. A., 2nd B. I.
MIHR DUS, Naik, Bengal S. and M.
- 1900...WINGATE, Capt. A. W. S., 14th B. I.
GURDIT SINGH, Havildar, 45th Sikhs.
- 1901...BURTON, Major E. B., 17th B. I.
SUNDER SINGH, Colour Havildar, 31st Burma Infantry.
- 1902...RAY, Capt. M. R. E., 7th Rajput Infantry.
TILDIR BHANDARI, Havildar, 9th Gurkha Rifles.
- 1903...MANFOLD, Lieut. Col. C. C., I.M.S.
GHULAM HUSSAIN, Lance-Dafadar, Q. O. Corps of Guides.
- 1904...FRASER, Capt. L. D., R.G.A.
MAGHAI BAZ, Dafadar, Q. O. Corps of Guides.
- 1905...RENNICK, Major F., 49th Pathans (specially awarded a gold medal).
MADHO RAM, Havildar, 8th Gurkha Rifles.

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No. 163.

THE BATTLEFIELDS OF NORTH ITALY.

BY LIEUT.-COLONEL THE HON. E. NOEL.

I

CASTIGLIONE.

There are certain districts of the earth's surface that seem destined by nature to be the arena of national conflicts, the "cockpit of nations."

One such is North Italy, and especially that part of it about the rivers Mincio and Adige. The reasons for this are not far to seek: 1st the plains of the Po basin form a natural highway for armies moving from the east to the west of Europe or *vice versa*; and 2nd through the Adige valley there debouches the main road of communication from Germany into Italy. The Brenner, less than 5,000 feet high, is the lowest pass over the main chain of the Alps and was the first to be furnished with a practicable carriage road in the eighteenth, and a railway in the nineteenth century, and it is now the line by which run the Rome-Berlin *trains de luxe*.

Thus in this favoured region a North-and-South and an East-and-West line cross one another at right angles. The latter too is here narrowed to small dimensions, between the river Po on one side and the Lago di Garda, the largest of the Italian Alpine lakes, on the other. We are not therefore surprised to find that this region has been the scene of the clash of arms all through history, from the defeat of the Cimbri by Marius in B. C. 101 down to the last struggle for Italian independence in A. D. 1866.

In connection with the former event there is what might be called a freak of history in the survival even to the present day of a community supposed to be the descendants of these Cimbri, who took refuge in the mountains after their defeat. Formerly spread over the hilly regions of the Provinces of

Verona, Vicenza and Trent, they are now almost restricted to the single parish of Glazza. This village lies at the head of the valley of the Illasi, 25 miles from Verona, and can be reached by a good road. The name "Cimbri" suggests a Celtic origin, but historians consider that the "Cimbri and Teutones" were mostly Teutonic. The traditions of the people are that they came about 2,000 years ago from the confines of Denmark; their speech, which they still call "Cimbri", is decidedly Germanic. As education is now compulsory and Italian is the language of the schools, it is likely that this linguistic fossil will soon be a thing of the past.

Of all the wars that have been waged in this region, there is none more interesting than the campaigns of Napoleon in 1796-97 when he first displayed to the world his wonderful genius for war. Let us first see what brought Napoleon, or General Bonaparte, as he then was, to this region which at that epoch belonged to the republic of Venice. The French revolution called forth a coalition of the monarchies of Europe against the new republic, and France had to carry on war at sea and on *all* her land frontiers at the same time. On her south-eastern or Alpine frontier she had to face Austria supported by one or more of the Italian States.

The episode in this theatre of war best known to the general public is probably the siege of Toulon. This great naval base was the convyance of the French royalists, had been handed over to the English, by whom it was held in conjunction with the Spaniards, Neapolitans and Piedmontese, and was besieged by the French land forces. This siege is famous in history as having been Bonaparte's first war service, as second in command and latterly in command of the artillery. A less well known episode is the naval victory of the English off Albasio on the 14th March 1795, when Lord Hotham with 13 ships of the line and 5 frigates besides 2 Neapolitan ships of the line and 2 frigates defeated Admiral Martin with 15 ships of the line, 6 frigates and 3 corvettes.

After the fall of Toulon Bonaparte served on the staff of the army of Italy. The war here was carried on for about three years without any decisive results until the French victory of Lissone in November 1795. This left the French in possession of all the country up to the crests of the Alps and Apennines. Meanwhile the success of the French arms in the Netherlands in 1794 and the peace with Prussia and with Spain in 1795 made it possible to prosecute the war in the south-east with more vigour.

In the early part of 1796 Bonaparte, at the age of 26, was appointed to the command. With an army of about 40,000 men and 60 guns, badly provided in every way, he was opposed to 30,000 Austrians under Beaulieu and 20,000 Piedmontese under Colli, with 200 guns. Bonaparte opened the campaign with characteristic energy by striking at the centre of his enemy's extended line, that is at the point of junction of the two armies. By his first victory at Montenotte on the 12th April he drove in like a wedge between them, and then struck to the right and left defeating the Austrians

at Dego on the 14th and 15th, and the Piedmontese at Millesimo on the 14th and Mondovì on the 22nd after which their Government made a separate peace, and this necessitated the withdrawal of the Austrians into Lombardy.

Bonaparte now showed himself as astute in negotiation as he was bold in action. He inserted in the armistice with Piedmont a clause reserving to the French army the right to cross the Po at Valenza. The Austrian commander, on learning this, placed his army in position to resist the French after their passage at this point. Bonaparte, however, while making demonstrations towards Valenza, made a forced march and crossed more than 50 miles lower down at Piacenza, in rear of the Austrian army, and had it not been for the want of bridging material by which his passage was rendered very slow, he would probably have cut them off before they could retire across the Adda. As it was he only came up with their rear guard on that river and then there occurred the famous fight of the Bridge of Lodi, which Napoleon said first made him feel that he was reserved for some great destiny. Here the French Grenadiers led by Bonaparte and Massena rushed the narrow bridge in the face of the fire of twenty guns. On this occasion the Austrians lost 2,000 men and 15 guns, and they then fell back to the Mincio. This brings us to that region with which it is proposed specially to deal.

At this period Mantua on the lower Mincio was the chief support of the Austrian power in Italy. For a long time the capital of the Gonzagas, it had in the beginning of the eighteenth century during the War of Spanish Succession passed to Austria. From Mantua to the Po is only about eight miles, and the country here is so low and swampy as to be very unfavourable for military movements, and consequently the passage of the Mincio has to be effected above Mantua, and the distance between Mantua and Peschiera at the south-east corner of Lake Garda is only about twenty miles. The river flows out of the lake a clear stream, and wends a winding course through low hills for about half this distance, after which it emerges into the plain. The chief points of passage are (besides Peschiera) Valeggio in the hilly district, and Goito in the plain where the road from Brescia to Mantua crosses.

Bonaparte forced the passage at the former spot on the 30th May: there is here a very picturesque old bridge, one arch of which the Austrians had destroyed. This spot is exceedingly pretty, with the clear and eddying stream flowing between high banks. The ruined castle of Valeggio rises high on the left bank and here an Austrian battalion made a stout defence to cover the retreat. The Austrians abandoned Peschiera and fell back into the South Tyrol, up the valley of the Adige, while the French took possession of Verona.

All this region, as already mentioned, was under the dominion of Venice, but that ancient and now effete republic was too weak to make its neutrality respected. The Venetian Government had been so far complacent to the Austrians as to consent to their occupation

The distance approximately from BADAL to either pass is 10 miles. This distance the battalions in reserve at BADAL could, on a flat and under normal conditions, cover in an hour. But the climb to either pass is approximately 4,500 feet. It would therefore be as well to allow two hours for the troops to cover the distance, get into position, and recover their wind. This question of the time it will take to march from BADAL to either pass must not be overlooked by me, should I have occasion to call upon the battalions in reserve to reinforce the troops in position at the passes.

Signalling communication will be established along the line of front indicated in the above disposition of the troops and in rear of BADAL and NAHUN; also if possible along the valley of the KARPAN, north to our main force and south to NIRMAND.

The Principal Medical Officer will commence all necessary preliminary arrangements.

The Supply and Transport Officer in co-operation with the local civil officials will collect such supplies of food and fodder as may be available.

I decide not to occupy the village of DOHU as an advance post with my own troops at any rate. It turned out of this village to retirement up the road and bare slopes back to the pass will be costly and might have a discouraging effect on Green forces co-operating with us. I should prefer to destroy the village so as to prevent it being used by the enemy as a tactical pivot from which to continue a further advance. But I have no Engineering Company or Pioneers and if the houses of the village are of the mud-brick construction they could not be completely destroyed by my force. If the Officer Commanding Green forces wishes to occupy this village with his own men I shall raise no objection.

Proposals for co-operation which I would make to Officer Commanding Green troops.

Immediately on arrival at NAHUN on the 21st February I should make inquiries as to the whereabouts of the Officer Commanding Green troops and if it were possible to get a letter to him that night. Assuming that I could get a letter to him that night I should write to him to the following effect:

1. I intend to occupy positions at NAHUN on the night of the 21st. I should not state the strength of my force. I cannot do so for the reason of my not knowing what strength at NAHUN for fear the enemy should be interested in it.

2. I should ask him to send a letter to the possible commanding force for the night of the 22nd.

A copy of the letter in Urdu should be sent with the original in English.

My own force is too small to occupy more than one Green trap should one prove to be a false alarm.

(i) Green Irregular Horsemen to be sent forward on all possible lines of advance of the enemy in order to gain contact with him, observe his movements and send in early information as to same.

(ii) Green Infantry also to be sent forward, as soon as the enemy's movements can be estimated, in order to delay his advance as much as possible. I should point out that this can best be done, not so much by a direct and passive defence, barring his line of advance, as by harassing his flanks and rearguard, disturbing his camp or bivouac at night, and by attacking his convoys of supply. Should the enemy persist in his advance, then the Green Infantry should gradually retire on to the KASHNERA PINDA-BAJKANDA ridge, where, together with my troops, a determined resistance can be made. I should point out the advantages of the position, and the numbers and position I think Green troops had better take up thereon (*vide* operation orders).

As to Green Artillery, I think they had better at once take position on the ridge and entrench. At any rate his Field Batteries should; his Mountain Battery might accompany his Infantry. The Officers Commanding Green Batteries might not be above accepting such assistance and instruction as my own gunners may have time to give them. Ranges at any rate can be taken, etc.

(iii) I should ask Officer Commanding Green troops to request Green civil authorities to render all assistance in the matter of furnishing supplies for my own forces.

(iv) In order to facilitate the lateral communications of my own and Green troops, I should point out how advantageous it would be, if behind and parallel to the NANUKANDA, KASHNERA PINDA and BAJKANDA ridge a track could be cut; I should ask Officer Commanding Green troops if he could furnish any men from the villages in the neighbourhood and tools for this purpose.

(v) In order to facilitate correspondence, and to keep in close touch with each other, I should offer the hospitality of my head-quarter camp to any officer of his troops whom the Officer Commanding Green troops may select to be attached to my staff. I would suggest an officer of my own staff being attached to his camp.

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*Operation orders by Brigadier-General X, Commanding. BADAL
23rd February 1905.*

1. The enemy is reported in force advancing against the KASH-
Information. NERA PINDA pass: hostile forces are also
 reported to be moving up the BAJKANDA
 pass. Green forces are co-operating with us. Their numbers are
 approximately 1,200 Infantry, 250 Horsemen, one Mountain Battery
 and two Field Batteries. Green Infantry and Horsemen and our
 Cavalry ($1\frac{1}{2}$ squadrons) are delaying enemy's advance in the DIMA
 NUDDEE valley. Green Artillery is in position on the KASH-
 NERA PINDA and BAJKANDA ridge. Our main army still
 maintains its position north of NAHUN.

2. I intend, in co-operation with Green troops, to defend the
Intention. KASHNERA PINDA and BAJKANDA passes,
 and the ridge connecting these passes.

3. The troops now at KASHNERA PINDA and BAJKANDA
Dispositions. passes will maintain their present positions under
 command respectively of Lieut.-Colonel A. and
 Lieut.-Colonel B.

The Reserve now at BADAL will move as follows:—

$\frac{1}{2}$ No. 3 Battalion to KASHNERA PINDA pass.

$\frac{1}{2}$ No. 4 Battalion to BAJKANDA pass.

Each half Battalion will be accompanied by its proper proportion
 of obligatory transport.

1 Field Troop of Cavalry

$\frac{1}{2}$ No. 3 Battalion

$\frac{1}{2}$ No. 4 Battalion

} To remain at BADAL ready
 } to move on receipt of orders.

4. In the event of Green troops, now operating in the DIMA
Distribution of NUDDEE valley, being compelled to fall back
Green troops. on our main position, they will come into line
 as follows:—

Infantry: four hundred men on the section NANUKANDA
 to KASHNERA PINDA pass.

Five hundred men on the ridge connecting the KASHNERA
 PINDA and BAJKANDA passes.

Three hundred men at peak 9,133 north of the BAJKANDA pass.

Cavalry: will concentrate at BADAL.

Artillery: the 2 Field Batteries are at the KASHNERA PINDA
 pass.

One Mountain Battery is on the ridge connecting the KASH-
 NERA PINDA and BAJKANDA passes.

5. Such baggage of the force as is now at BADAL will remain
Baggage. there, stacked, ready to load up and move off on
 receipt of orders.

6. The Principal Medical Officer will
Medical. complete medical arrangements necessary.

7. The Brigade Supply and Transport Officer will forward two extra days' rations for men and animals to the passes, to be stacked in places, which will be shown him by the Officers Commanding at the passes.

Supplies.

8. Officers Commanding at the passes will make their own arrangements for the water-supply of the men and animals under their respective commands.

Water.

9. All reports will be sent to the two peaks 9,598 and 9,599, on each of which headquarter signalling posts have been established.

Position of G.O.C.

Copies to O.C. Units and Reserve.

Issued at 7 A.M.

(Signed)

MAJOR,
D.A.A.-G., Brigade.

TACTICAL SCHEME COMPETITION.

JANUARY 1906.

References to map which will be supplied on demand.

GENERAL IDEA.

Punitive operations have been undertaken by the British Government against the MAHSUDS and DARWESH KHEL WAZIRS. The expeditionary force is in occupation of the two principal villages MAKIN and KANIGURAM. The tribesmen after suffering defeat in several engagements have fled to the hills and valleys to the west of MAKIN and KANIGURAM. The tribesmen are well armed with B.-L. rifles.

SPECIAL IDEA.

On the 10th May at MAKIN, Colonel X receives the following orders from the C. S. O. Expeditionary Force:—

1. The enemy has a rifle and ammunition factory at MAZALDIN.
 2. Colonel X will take command of the force detailed in the margin and surprise the village of MAZALDIN. The capture of the workmen and destruction of the manufacturing plant is of the greatest importance.
- * $\frac{1}{2}$ Coy. S. and M.
No. 3 Mountain Battery.
1st Sussex Regt.
1st N. I.
2nd N. I.
100 Gurkha Scouts.**

3. The force will move as light as possible.

2nd reserve ammunition will not be taken.

Required: as Staff Officer to Colonel X—

1. A brief appreciation of the situation, giving in conclusion an outline of the suggested plan of action.

2. A calculation of the transport required, and the length of column on the march.

3. Write such orders as would be required for the execution of the plan on the lines suggested by you, up to the occupation of MAZALDIN. You may assume that the enemy's action does not interfere with your plan.

*These troops are all concentrated at MAKIN.

Intending competitors should forward their names to the Secretary of the Institution, together with the sum of Re. 1, when they will receive a copy of the map to which the scheme relates, together with all instructions.

This competition will close on 1st June 1906. Solutions received after that date will be treated as "LATE" for adjudication.

United Service Institution of India.

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 1893...BULLOCK, Maj. G. M., Devonshire Regt.
 1894...CARTER, Capt. F. C., Northumberland Fusiliers.
 1895...NEVILLE, Lieut.-Col. J. P. C., 14th Bengal Lancers.
 1896...BINGLEY, Capt. A. H., 7th Bengal Infantry.
 1897...NAPIER, Capt. G. S. F., Oxfordshire L. I.
 1898...MULLALY, Maj. H., R.E.
 CLAY, Capt. C. H., 43rd Gurkha Rifles (specially awarded a silver medal).
 1899...NEVILLE, Col. J. P. C., S.C.
 1900...THUILLER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901...RANKEN, Lieut.-Col. G. P., 46th Punjab Infantry.
 1902...TURNER, Capt. H. H. F., 2nd Bengal Lancers.
 1903...HAMILTON, Maj. W. G., D.S.O., Norfolk Regt.
 BOND, Capt. R. F. G., R.E. (specially awarded a silver medal).
 1904...MACMUNN, Maj. G. F., D.S.O., R.F.A.
 1905...COCKERILL, Maj. G. K., Royal Warwickshire Regt.

MACGREGOR MEMORIAL SILVER MEDALLISTS.

- 1889...BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
- 1890...YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
- 1891...SAWYER, Maj. H. A., 45th Sikhs.
RAMZAN KHAN, Havildar, 3rd Sikhs.
- 1892...VAUGHAN, Capt. H. B., 7th Bengal Infantry.
JAGGAT SINGH, Havildar, 19th P. I.
- 1893...BOWER, Capt. H., 17th Bengal Cavalry (specially awarded a gold medal).
FAZALDAD KHAN, Dafadar, 17th B. C.
- 1894...O'SULLIVAN, Maj. G. H. W., R.E.
MULL SINGH, Sowar, 6th B. C.
- 1895...DAVIES, Capt. H. R., Oxfordshire L. I.
GUNGA DYAL SINGH, Havildar, 2nd Rajputs.
- 1896...COCKERILL, Lieut. G. K., 28th Punjab Infantry.
GHULAM NABI, Sepoy, Q. O. Corps of Guides.
- 1897...SWAYNE, Capt. E. J. E., 16th Rajput Infantry.
SHAHZAD MIR, Dafadar, 11th B. L.
- 1898...WALKER, Capt. H. B., Duke of Cornwall's L. I.
ADAM KHAN, Havildar, Q. O. Corps of Guides.
- 1899...DOUGLAS, Capt. J. A., 2nd B. L.
MIHR DIN, Naik, Bengal S. and M.
- 1900...WINGATE, Capt. A. W. S., 14th B. L.
GURDIT SINGH, Havildar, 45th Sikhs.
- 1901...BURTON, Major E. B., 17th B. L.
SUNDER SINGH, Colour Havildar, 31st Burma Infantry.
- 1902...RAY, Capt. M. R. E., 7th Rajput Infantry.
TILBIR BHANDARI, Havildar, 9th Gurkha Rifles.
- 1903...MANIFOLD, Lieut. Col. C. C., I.M.S.
GHULAM HUSSAIN, Lance-Dafadar, Q. O. Corps of Guides.
- 1904...FRASER, Capt. L. D., R.G.A.
MOGHAL BAZ, Dafadar, Q. O. Corps of Guides.
- 1905...RENNICK, Major F., 40th Pathans (specially awarded a gold medal).
MADHO RAM, Havildar, 8th Gurkha Rifles.

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THE BATTLEFIELDS OF NORTH ITALY.

BY LIEUT.-COLONEL THE HON. E. NOEL.

I

CASTIGLIONE.

There are certain districts of the earth's surface that seem destined by nature to be the arena of national conflicts, the "cockpit of nations."

One such is North Italy, and especially that part of it about the rivers Mincio and Adige. The reasons for this are not far to seek: 1st the plains of the Po basin form a natural highway for armies moving from the east to the west of Europe or *vice versa*; and 2nd through the Adige valley there debouches the main road of communication from Germany into Italy. The Brenner, less than 5,000 feet high, is the lowest pass over the main chain of the Alps and was the first to be furnished with a practicable carriage road in the eighteenth, and a railway in the nineteenth century, and it is now the line by which run the Rome-Berlin *trains de luxe*.

Thus in this favoured region a North-and-South and an East-and-West line cross one another at right angles. The latter too is here narrowed to small dimensions, between the river Po on one side and the Lago di Garda, the largest of the Italian Alpine lakes, on the other. We are not therefore surprised to find that this region has been the scene of the clash of arms all through history, from the defeat of the Cimbri by Marius in B. C. 101 down to the last struggle for Italian independence in A. D. 1866.

In connection with the former event there is what might be called a freak of history in the survival even to the present day of a community supposed to be the descendants of these Cimbri, who took refuge in the mountains after their defeat. Formerly spread over the hilly regions of the Provinces of

Verona Vicenza and Trent, they are now almost restricted to the single parish of Giazza. This village lies at the head of the valley of the Illasi, 25 miles from Verona, and can be reached by a good road. The name "Cimbri" suggests a Celtic origin, but historians consider that the "Cimbri and Teutones" were mostly Teutonic. The traditions of the people are that they came about 2,000 years ago from the confines of Denmark; their speech, which they still call "Cimbri", is decidedly Germanic. As education is now compulsory and Italian is the language of the schools, it is likely that this linguistic fossil will soon be a thing of the past.

Of all the wars that have been waged in this region, there is none more interesting than the campaigns of Napoleon in 1796-97, when he first displayed to the world his wonderful genius for war. Let us first see what brought Napoleon, or General Bonaparte as he then was, to this region which at that epoch belonged to the republic of Venice. The French revolution called forth a coalition of the monarchies of Europe against the new republic, and France had to carry on war at sea and on *all* her land frontiers at the same time. On her south-eastern or Alpine frontier she had to face Austria supported by one or more of the Italian States.

The episode in this theatre of war best known to the general public is probably the siege of Toulon. This great naval base, with the connivance of the French royalists, had been handed over to the English, by whom it was held in conjunction with the Spaniards, Neapolitans and Piedmontese, and was besieged by the French land forces. This siege is famous in history as having been Bonaparte's first war service, as second in command and latterly in command of the artillery. A less well-known episode is the naval victory of the English off Allassio on the 14th March 1795, when Lord Hotham with 13 ships of the line and 5 frigates besides 2 Neapolitan ships of the line and 2 frigates defeated Admiral Martin with 15 ships of the line, 6 frigates and 3 corvettes.

After the fall of Toulon, Bonaparte served on the staff of the army of Italy. The war here was carried on for about three years without any decisive results until the French victory of Loano in November 1795. This left the French in possession of all the country up to the crests of the Alps and Apennines. Meanwhile the success of the French arms in the Netherlands in 1794 and the peace with Prussia and with Spain in 1795 made it possible to prosecute the war in the south-east with more vigour.

In the early part of 1796 Bonaparte, at the age of 26, was appointed to the command. With an army of about 40,000 men and 60 guns, badly provided in every way, he was opposed to 30,000 Austrians under Beaulieu and 20,000 Piedmontese under Colli, with 200 guns. Bonaparte opened the campaign with characteristic energy by striking at the centre of his enemy's extended line, that is, at the point of junction of the two armies. By his first victory at Montenotte on the 12th April he drove in like a wedge between them, and then struck to the right and left, defeating the Austrians

at Dego on the 14th and 15th, and the Piedmontese at Millesimo on the 14th and Mondovi on the 22nd after which their Government made a separate peace, and this necessitated the withdrawal of the Austrians into Lombardy.

Bonaparte now showed himself as astute in negotiation as he was bold in action. He inserted in the armistice with Piedmont a clause reserving to the French army the right to cross the Po at Valenza. The Austrian commander, on learning this, placed his army in position to resist the French after their passage at this point. Bonaparte, however, while making demonstrations towards Valenza, made a forced march and crossed more than 50 miles lower down at Piacenza, in rear of the Austrian army, and had it not been for the want of bridging material by which his passage was rendered very slow, he would probably have cut them off before they could retire across the Adda. As it was he only came up with their rear guard on that river and then there occurred the famous fight of the Bridge of Lodi, which Napoleon said first made him feel that he was reserved for some great destiny. Here the French Grenadiers led by Bonaparte and Massena rushed the narrow bridge in the face of the fire of twenty guns. On this occasion the Austrians lost 2,000 men and 15 guns, and they then fell back to the Mincio. This brings us to that region with which it is proposed specially to deal.

At this period Mantua on the lower Mincio was the chief support of the Austrian power in Italy. For a long time the capital of the Gonzagas, it had in the beginning of the eighteenth century during the War of Spanish Succession passed to Austria. From Mantua to the Po is only about eight miles, and the country here is so low and swampy as to be very unfavourable for military movements, and consequently the passage of the Mincio has to be effected above Mantua, and the distance between Mantua and Peschiera at the south-east corner of Lake Garda is only about twenty miles. The river flows out of the lake a clear stream, and wends a winding course through low hills for about half this distance, after which it emerges into the plain. The chief points of passage are (besides Peschiera) Valeggio in the hilly district, and Goito in the plain where the road from Brescia to Mantua crosses.

Bonaparte forced the passage at the former spot on the 30th May: there is here a very picturesque old bridge, one arch of which the Austrians had destroyed. This spot is exceedingly pretty, with the clear and eddying stream flowing between high banks. The ruined castle of Valeggio rises high on the left bank and here an Austrian battalion made a stout defence to cover the retreat. The Austrians abandoned Peschiera and fell back into the South Tyrol, up the valley of the Adige, while the French took possession of Verona.

All this region, as already mentioned, was under the dominion of Venice, but that ancient and now effete republic was too weak to make its neutrality respected. The Venetian Government had been so far complacent to the Austrians as to consent to their occupation

of Peschiera, and in these circumstances it was not to be supposed that the French would be squeamish with regard to neutral territory.

Bonaparte had already formed a design for following up his success by a march across the Alps to effect a junction with the French army of the Danube. The forces at his disposal, however, were quite inadequate for such an enterprise, and he felt the necessity of reducing Mantua before he could venture on a further advance. He had now only three Divisions, those of Massena, Augereau and Serrurier: the two latter undertook the siege of Mantua, while Massena covered the approaches from the Tyrol, at and about Rivoli, destined ere long to become so famous.

At the little village of Roverbella a few miles north of Mantua, an inscription on a house tells us that it was occupied by Bonaparte on his way, to open the siege, early in June. During the progress of the siege, Bonaparte was occupied in settling affairs in rear of his army. This necessitated the movement of part of his forces south of the Po and led to some fighting of no interest. When, however, he had made armistices with the Governments of Naples and Rome and received the capitulation of the castle of Milan, he was again free to return to the Mincio.

The Austrian Government set much store by Mantua, and detached Marshal Wurmser from the Rhine with large reinforcements to effect its relief. Mantua now became the pivot of the operations and the various efforts to save this fortress gave rise to most interesting and instructive movements.

The siege was pushed with vigour, mostly with guns captured from the Austrians, and the place would probably have soon succumbed only for the appearance of Wurmser in Italy. He arrived in the South Tyrol in the middle of July and with the reinforcements that he had brought with him from Germany had some 60,000 men: the garrison of Mantua was probably 12,000. To oppose these Bonaparte had, including those engaged in the siege, little over 40,000. We shall see how his genius for war made up for this deficiency.

To Wurmser moving from Trent on Mantua three ways lay open:—

1st. The eastern, through the gorges of the Brenta debouching by Bassano on Vicenza: this road besides being circuitous has the further disadvantage of necessitating a passage of the Adige below Verona where it is a formidable obstacle.

2nd. The central, the high road down the Adige valley, debouching on Verona.

3rd. The western, on the west side of the lake of Garda, not along the shore of the lake but through the hilly country beyond past the small lakes of Ledro and Idro, debouching on Brescia; this was not practicable for heavy artillery.

The eastern approach was watched by Augereau's Division on the lower Adige, the central by Massena's strong Division at and about Rivoli, the western by a weak Division under Sauret at

Salo and Gavardo; Serrurier's Division was besieging Mantua. Wurmser decided to move with his main body by the central road and to send a strong detachment (28 battalions, 17 squadrons and 24 guns) under Quasdanovich by the western.

Both of these bodies came in contact with the French on the 29th July. Massena had to fall back to Pastrengo down the Adige, and Sauret to Desenzano at the south-west corner of Lake Garda. Bonaparte himself on the first news of the attack on Massena had hastened to Castelnovo, a village near Peschiera where the road by which Massena was retiring joins the Peschiera-Verona road. Here information reached him of Quasdanovich's advance. He thus found himself assailed by superior forces on two lines and his communications threatened, or worse, for Quasdanovich had pushed as far as Brescia on the main road to Milan. In these circumstances any ordinary General would have raised the siege of Mantua and retreated across the Oglio or even the Po.

Bonaparte, however, at once saw the chance offered him, by the division of the enemy, of defeating each portion separately, and assuming that Wurmser would move straight on his objective Mantua, he reckoned that this would give him time to crush Quasdanovich and then to turn and meet Wurmser. As he had no means of carrying away the siege guns, he abandoned the whole of them during the night of the 30th July and concentrated almost his whole army near the south-west corner of the lake of Garda.

Augereau marched from Legnago to Brescia, over 60 miles, in two days and recovered that important town. On the afternoon of the 31st Quasdanovich's advanced guard was defeated at Lonato and General Guyeux who had held out for two days with only one French battalion at Salo was relieved. On Quasdanovich again advancing he was again defeated by Bonaparte at Lonato on the 3rd August. This small town, on the high road between Brescia and Verona, is situated on a hill, with a lovely view over the lake of Garda, and commands all the surrounding country.

Wurmser meanwhile had marched on steadily to relieve his no longer besieged fortress and having there heard of the misfortunes of his colleague, set out, when it was already too late, to stretch him a helping hand. On the same day that Bonaparte fought at Lonato, Augereau, returned from Brescia, had driven Wurmser's advanced guard from Castiglione, only five miles distant. His main body was still so far off as to allow Bonaparte to follow up his advantage and to inflict such a blow on Quasdanovich next day at Gavardo as to make him retreat into the Tyrol.

A curious episode occurred on this day: Bonaparte had returned to Lonato with only a cavalry escort, and was summoned to surrender by the Austrians, of whom some two thousand of those dispersed in the previous day's battle, had collected together and were endeavouring to find their way to Wurmser's army. Bonaparte ordered the bandage to be removed from the eyes of the *parlementaire* who thus found himself suddenly in the presence of the

Commander-in-Chief. The latter expressed his indignation at being summoned "in the midst of his troops" and told the *parlementaire* to return at once and call upon his Chief to lay down his arms—which he did!

The day for the decisive battle had now come, and this was fought to the south-east of Castiglione between that town and Guidizzolo. Castiglione was formerly a possession of the Gonzaga family whose castle is still extant. Like Lonato, with which it is now connected by a good cross road, it stands on the edge of the small hilly region lying to the south of Lake Garda on the Brescia—Mantua high road and between the rivers Chiese and Mincio. Beyond Castiglione the high road skirts this hilly region keeping on the flat. The Austrian position was partly on the plain and partly on the hill; the left rested on the mound of Medole on the plain, and the right on the tower of Solferino, destined to attain to world-wide fame in a greater battle under another Napoleon more than sixty years later.

Massena's Division formed the left of the French army, Augereau's the right, beyond whom, down in the plain, lay the cavalry under Kilmaine.

After raising the siege of Mantua, that part of Serrurier's Division that lay on the left bank of the Mincio had joined Augereau on his march to Brescia, the remainder, now commanded by Fiorella, had retired to the Po and then taken up a position covering the main line of retreat on Piacenza, and had drawn a portion of the garrison in their pursuit. In this position they were within twenty miles of the field of the coming battle, and after making a night march they came up in the morning on the left rear of the Austrian army and rendered their defeat almost certain.

A reinforcement of nearly 3,000 men had reached Brescia on the 3rd August, and this enabled Bonaparte to bring up two demi-brigades from that garrison, and these arriving in the afternoon carried the tower of Solferino on the Austrian right. The Austrians were then driven back across the Mincio and afterwards retired into the Tyrol, having put a fresh garrison into Mantua. The French resumed their former positions. Thus ended the first effort to relieve Mantua.

The lessons to be learnt from this remarkable campaign are—1st, the disadvantage of dividing an army by such an obstacle as a large lake;

2nd, the advantage of a central position, enabling the same troops to fight two enemies in succession; and,

3rd, above all the greater importance of field operations than the capture or relief of fortresses.

We cannot too much admire Bonaparte's resolution to abandon the siege of Mantua and his rapid concentration in a position from which he could strike right and left.

After his victory at Lonato on the 3rd August he was able to send reinforcements to Augereau engaged on the same day at Castiglione five miles distant, and the same troops that had defeated

Quasdanovich on the 3rd and 4th took part in the defeat of Wurmser on the 5th.

Great as was the numerical inferiority of the French, they fought every action with a superior force. This is especially noticeable in the final battle of Castiglione, when Wurmser, deprived of Quasdanovich and having had to weaken his own force by detachments to guard his communications, out of a total field army of 60,000 (not counting the garrison of Mantua) had only 25,000 in line, whereas Bonaparte out of a total of little over 40,000 had 35,000, that is his whole force except Sauret's weak Division which had followed Quasdanovich, and small garrisons in Peschiera and Brescia. The skill with which even the remnant of the besieging Division was brought up for this occasion is deserving of notice, as well as the last reinforcement from Brescia.

The scenes of these interesting manœuvres are easy to visit. The main line of railway from Milan to Venice passes through Brescia, Lonato, Desenzano and Peschiera. One of the steam tramways common in Italy runs from Brescia across the field of Castiglione to Mantua; another from Brescia to Salo and Gavardo. The bicycle, however, affords the best means of locomotion in this region where even the by-roads are quite practicable.

More recent military operations have obliterated in this country the memory of these great events, and Napoleon the Great is no longer remembered in these scenes of his first campaigns. There is, however, more instruction to be drawn, and more to admire in the skill with which this great master foiled a superior force than in the less able, even if politically more important, operations of later times, and the names of Lonato and Castiglione will long remain dear to all who love to study the higher art of war.

II

BASSANO.

After the failure of his first attempt to relieve Mantua in August 1796, Wurmser, the Austrian Commander-in-Chief, had withdrawn his army to the neighbourhood of Trent, and on the arrival of a new Chief of the Staff with fresh plans from Vienna, he felt ready to make a further effort. He had now at his disposal about 45,000 men. On the former occasion he had moved by the central and western of the three roads open to him from Trent to Mantua; this time he decided to use the central and the eastern.

The main army under his own command, about 25,000 strong, was to move by the circuitous eastern route through Bassano, Vicenza and Legnago, while a strong detachment under Davidovich, about 20,000, was to follow the direct road down the Adige valley.

This plan bore a rather ominous likeness to that which had so signally failed only a month before, and, had Bonaparte maintained as then a defensive attitude, it is probable that from the central position of Verona he would have again crushed each fraction in

succession. Circumstances, however, gave a different turn to affairs this time. The rôle of covering the blockade of a fortress was one that ill-suited the ardent temperament of Bonaparte who was longing to move forward into the enemy's country and had formed a project for crossing the Alps and joining the French army on the Danube, or else of himself pushing on south of the Alps towards Trieste. With this object he proposed to move up the Adige and push Wurmser back into the high valleys of the Tyrol.

The French army had received some reinforcements and now consisted of four Divisions. One of these under Vaubois lay to the west of Lake Garda, another under Massena in the Adige valley above Verona, a third, Augereau's, was on the lower Adige, and the fourth, Suhuguet's, was blockading Mantua; Sauret was on the line of communications. Thus three Divisions were available for the proposed advance, which was made just as Wurmser was beginning his new movement to relieve Mantua, and, as we should expect, this simultaneous move of each Commander against the other's right flank led to very curious results.

Bonaparte's plan was to advance with one Division on each side of the lake, and to unite beyond it, while the third, Augereau's, was to move through the hills from Verona and cover the right flank. It may seem at first that in so doing he was repeating the mistake of Wurmser in the previous campaign. The circumstances, however, were very different: on this occasion each of his two Divisions already held positions some distance up the lake, so that to have brought one of them back round its broad southern end would have wasted some days, whereas they could effect a junction round the narrow northern end very quickly, too quickly to allow time for Davidovich to act centrally against each in succession. Davidovich's own Corps was scattered, and it is not so easy to concentrate in the confined valleys of the Tyrol as it is on the open plains of Lombardy. The plan was justified by the result, for the junction was effected on the second day, after meeting only a detachment which either Division alone would have been strong enough to overcome.

The force at Bonaparte's disposal was 32,000 or 33,000.

The campaign opened on the 3rd September 1796. Massena pushed back the Austrian advanced posts at Serravalle, and Vaubois at the bridge of Sarca, at the head of Lake Garda, a spot of singular beauty where the clear and deep blue waters of the lake lie imbedded among high mountains. Next day, after some fighting at San Marco and Mori, the two Divisions joined, and further inflicted a defeat on the enemy at the formidable gorge of Calliano, sometimes called the "Battle of Rovereto," and the French entered Trent the following morning.

This ancient city, so famous in history through the ecclesiastical council held there in the sixteenth century, is situated at the meeting point of important valleys and roads, and was at this time the seat of a Prince Bishop. Subsequently annexed to Austria, it is now the chief town of the Italian Tyrol, a district Italian in speech but still subject to the rule of the stranger.

Here Bonaparte learned that he had only a portion of the Austrian army in front of him, and that Wurmser with the main body had moved on Mantua by way of Bassano. Most Generals in these circumstances would have fallen back by the safe and direct route of the Adige valley and fought a battle in the plains to cover the siege. Bonaparte did not hesitate in choosing a bolder course, to follow on the heels of Wurmser and cut him off from his remaining line of communication with Austria through the Friuli.

Before starting on this new course, however, he thought well to further disable Davidovich, who had taken up a position at Lavis only a few miles north of Trent. He set out, with characteristic energy, the same day, and attacked and defeated him in the evening. On this occasion the 10th Mounted Chasseurs crossed the river by a ford, led by Murat, carrying foot soldiers *en croupe*, thus repeating the exploit of the Swedish cavalry at the passage of the Lech in 1632. Having thus disposed of Davidovich, Bonaparte left Vaubois' Division to watch him while Massena's returned to Trent.

Augereau had meanwhile descended into the valley, and, preparatory to the new movement, was directed on Levico in the valley of the Brenta, and now took the lead in the advance down that valley, closely followed by Massena. On the 7th a detachment of Croats were driven back from Primolano, and the French army bivouaced not far from the exit on to the plains. It is recorded of Bonaparte on this occasion that in his eagerness to secure the opening from the valley, he pressed on to the very front and passed the night in bivouac among his soldiers, one of whom gave him a share of his rations.

Wurmser meanwhile had progressed as far as Vicenza and had pushed his advanced guard even further, but on hearing that Bonaparte was coming after him from Trent he turned to stand at Bassano. This small town is picturesquely situated at the edge of the plains on the rushing Brenta, over which a wooden bridge now stands in the place of that destroyed during the battle. He was attacked here on the 8th September by Bonaparte and completely defeated with the loss of 4,000 prisoners, 30 guns and nearly all the train of the army. One of his Divisions, that of Quasdanovich, was separated from the rest of the Corps and driven eastwards towards the Adriatic. With the remainder he made good his retreat on Vicenza which nevertheless was occupied the same evening by Massena.

Wurmser's position was now indeed a sorry one—completely separated from his right wing, and from one Division of his own Corps, he had only about 14,000 men, and was cut off from all communication with his own country. He now resolved to make a refuge of that fortress to relieve which had been the whole object of his campaign!

Legnago was not held by the French at this moment, its small garrison having been recalled to aid in the defence of Verona, and this place afforded him a safe and easy passage over the Adige: for this point then he accordingly ran. Augereau's Division followed by

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way of Padua to prevent Wurmser from doubling back along the left bank of the Adige towards the Adriatic, while Massena took the more direct road crossing the Adige at Ronco. This passage had then, as indeed it has at the present day, only a ferry boat, and as few other boats were available the crossing occupied Massena much of the night of the 10th—11th September.

The country between Legnago and Mantua, a distance of about 25 miles, is somewhat swampy and is intersected by canals and streams, affluents of the Po. The stream nearest to Mantua is the Tione, and Bonaparte had sent orders to the blockading Division to destroy the bridges over it and to dispute the passage. Thus, on the 11th September, closely pursued in rear by Augereau, with Massena coming down on his right, the deep current of the Po on his left and his front barred by the Tione, the Austrian commander's position seemed well nigh desperate. He now however escaped by two of those accidents which in war often upset carefully laid plans.

From Ronco, where Bonaparte with Massena's Division crossed the Adige, to Sanguinetto where he reckoned to cut Wurmser off, there are two roads, one direct, and the other nearer the Adige more circuitous. Unluckily for Bonaparte the guide led the French army by the latter, so that only the advanced guard came on the Austrian column, not at Sanguinetto, but at Cerea nearer Legnago, and they were brushed aside by the superior force of the enemy.

Wurmser had left a garrison of nearly 2,000 men in Legnago and these stopped Augereau's advance. He had thus warded off immediate danger from both rear and right, but even so with the Tione held against him escape seemed still almost impossible. He marched all night to keep ahead of Massena who was pressing on with his tired troops.

Bonaparte had ordered all the bridges over the Tione to be destroyed, but, by some strange oversight or neglect, one, at Villimpenta, had been left standing, and by this Wurmser got across and slipped into Mantua on the 12th with 8,000 foot and 4,000 horse. Bonaparte's chagrin at thus seeing his prey escape can be easily imagined. He well knew, however, that Mantua was not an easy place to get out of. Legnago had capitulated on the 12th and Augereau advanced on the 13th closing all chance of escape along the lower Po.

A considerable portion of the Austrian forces was encamped outside the place and on Massena's attempting to drive them in on the 14th a curious episode occurred: some Austrian cavalry were returning from Mantua where they had been to draw forage, and on finding their infantry hard pressed, they threw aside their bundles of hay, charged the French barebacked, and drove them off.

The following day, the 15th September, a battle was fought outside Mantua, known as the "Battle of St. George" from an outwork of that name beyond the lake. Bonaparte's plan was to make false attacks on both flanks and having thus induced the enemy to weaken his centre to make there the real attack. His plan succeeded and the Austrians were driven into the fortress with a loss

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way of Padua to prevent Wurmser from doubling back along the left bank of the Adige towards the Adriatic, while Massena took the more direct road crossing the Adige at Ronco. This passage had then, as indeed it has at the present day, only a ferry boat, and as few other boats were available the crossing occupied Massena much of the night of the 10th—11th September.

The country between Legnago and Mantua, a distance of about 25 miles, is somewhat swampy and is intersected by canals and streams, affluents of the Po. The stream nearest to Mantua is the Tione, and Bonaparte had sent orders to the blockading Division to destroy the bridges over it and to dispute the passage. Thus, on the 11th September, closely pursued in rear by Augereau, with Massena coming down on his right, the deep current of the Po on his left and his front barred by the Tione, the Austrian commander's position seemed well nigh desperate. He now however escaped by two of those accidents which in war often upset carefully laid plans.

From Ronco, where Bonaparte with Massena's Division crossed the Adige, to Sanguinetto where he reckoned to cut Wurmser off, there are two roads, one direct, and the other nearer the Adige more circuitous. Unluckily for Bonaparte the guide led the French army by the latter, so that only the advanced guard came on the Austrian column, not at Sanguinetto, but at Cerea nearer Legnago, and they were brushed aside by the superior force of the enemy.

Wurmser had left a garrison of nearly 2,000 men in Legnago and these stopped Augereau's advance. He had thus warded off immediate danger from both rear and right, but even so with the Tione held against him escape seemed still almost impossible. He marched all night to keep ahead of Massena who was pressing on with his tired troops.

Bonaparte had ordered all the bridges over the Tione to be destroyed, but, by some strange oversight or neglect, one, at Villimpenta, had been left standing, and by this Wurmser got across and slipped into Mantua on the 12th with 8,000 foot and 4,000 horse. Bonaparte's chagrin at thus seeing his prey escape can be easily imagined. He well knew, however, that Mantua was not an easy place to get out of. Legnago had capitulated on the 12th and Augereau advanced on the 13th closing all chance of escape along the lower Po.

A considerable portion of the Austrian forces was encamped outside the place and on Massena's attempting to drive them in on the 14th a curious episode occurred: some Austrian cavalry were returning from Mantua where they had been to draw forage, and on finding their infantry hard pressed, they threw aside their bundles of hay, charged the French barebacked, and drove them off.

The following day, the 15th September, a battle was fought outside Mantua, known as the "Battle of St. George" from an outwork of that name beyond the lake. Bonaparte's plan was to make false attacks on both flanks and having thus induced the enemy to weaken his centre to make there the real attack. His plan succeeded and the Austrians were driven into the fortress with a loss



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of 2,000 men and 20 guns. Without a siege train the French could not really besiege the fortress, but only blockade it partially, and the now reinforced garrison with its numerous cavalry had ample opportunity for issuing to collect supplies from the surrounding country.

In this campaign we greatly admire Bonaparte's vigour and rapidity of action. Massena's Division, from the time it left its cantonments on the Adige to its entry into Vicenza, marched over 120 miles and fought five actions in six days, and this was at once followed by the pursuit of Wurmser and the tedious night passage of the Adige at Ronco. His persistence in the pursuit of Wurmser is remarkable, and shows his appreciation of the importance of not only defeating but of *destroying* the enemy's field army. Wurmser saved himself by his sacrifice of a detachment at Legnago.

This campaign had indeed a most curious and unexpected ending. Wurmser had started with 45,000 men to relieve Mantua, and he ended by flying for refuge into this fortress with a beaten remnant of 12,000, whose safety was chiefly due to a couple of accidents, and the cavalry horses of which were eventually used as food for the garrison. On the other hand Bonaparte, having set out with the hope of reaching either the Danube or Trieste, found himself far in rear of his starting point, with his enemy's forces defeated indeed and scattered, but the remnant which he had hoped to run down safely ensconced in this fatal fortress which he had not the means of capturing.

Of the four places, Mantua, Legnago, Peschiera and Verona, which afterwards formed the famous "Quadrilateral," only Mantua at this time was a fortress, the rest were merely walled towns, Peschiera indeed scarcely more than a village. They are now all connected by railways, and a railway and an excellent road leads up the Adige valley from Verona to Trent and on to Germany through Brixen. A branch line from this near Rovereto leads to the head of Lake Garda to the small town of Riva, now an Austrian garrison and a place of singular beauty. Hence a good road through the mountains leads to Brescia passing the frontier near the head of Lake Idro, on the high ground above which stands the fort of Rocca D'Anfo garrisoned by Italian Alpine troops. The passage round the head of Lake Garda is now blocked by an Austrian fort. This region was the scene of the not very successful operations of the Italian Volunteers in 1848 and again in 1866.

Bassano, the scene of the battle of the 8th September, is connected by railway with Vicenza and Padua. From Trent through the valley of the Brenta there is a railway as far as the Austrian frontier at Tezze : thence to Bassano 23 miles there is no railway, but a good road all the way forms a pleasant and picturesque drive or ride for a cyclist, passing the little lake of Levico. Primolano, the scene of the combat of the 7th September, is just over the border on the Italian side. This country, which was then the battlefield of France and Austria and when we hear nothing of the Italians, has now enjoyed nearly forty years of tranquillity in the new Kingdom of Italy, the Tyrol still remaining to Austria.

THE USE OF FIELD FORTIFICATION.*

BY MAJOR W. EWBANK, *p.s.c.*, R. E.

It is customary to commence a lecture on the use of Field Fortification with Napoleon's words:—

"Field fortifications are always useful, never harmful, when they are well understood."

This has been called an axiom of war. Like many other axioms it is remarkably vague and carefully hedged. All that we can learn from it is that a thorough understanding of the subject is necessary, not merely to make the most advantageous use of field defences, but to prevent their employment being harmful. The possibility of their use being harmful has been clearly recognised. It has been said that battles are not won by putting men into trenches: that the tactical use of field fortification implies a defensive attitude, and therefore a surrender of all initiative to the enemy. It is pointed out that Napoleon won his victories by mobility and tactical flexibility, or as Emerson said, "He conquered Europe by the bivouac which consisted in falling back on naked valour and disencumbering it of all aids."

That brilliant little campaign of General Stonewall Jackson's in the Shenandoah Valley in the earlier part of the American Civil War is quoted as a case where little use was made of entrenchments; where a force of between 3,000 and 4,000 men of the Confederates, or Southerners, kept nearly ten times their number of the enemy fully employed for five months, and won several victories by hard marching, mobility, secrecy, and valour.

As against these arguments we may say that circumstances of Napoleon's many campaigns prevented him from being a great practical exponent of the utility of fortification; that as the American Civil War progressed field fortification was very largely resorted to, and that recent wars have added to, rather than diminished, the importance of the spade. We shall find that objections to the tactical use of field fortification are due to a lack of appreciation of just those very principles that it is necessary to understand.

Fortification must be looked upon as a means to an end. That end is the defeat of the enemy's forces. Let us then start with what may be called a bed-rock principle, applicable to strategy and tactics. We must so manœuvre as to be able to take the offensive in superior strength at the decisive point. This sounds rather like another of those vague axioms, but when we examine it a little more closely, we shall find it is a broad road leading us in the right direction towards our immediate object which is the question "what aid will entrenchments afford?"

* A garrison lecture delivered at Mhow in May 1905.

To save repetition of words let us call—

(A) The decisive point, wherever it may happen to be.

(B) The line of communications.

(C) Any points of value by virtue of being supply depôts, harbours, junctions of roads, and railways.

(D) Any positions occupied by portions of our troops not coming under the above category.

It is obvious that if we can economise the troops required for B, C, and D, we shall have all the more available for A. Here we get a clue to a guiding principle for the use of fortification. Entrenchments, by strengthening a locality, economise the number of men required for its defence. We must, however, guard against one error, the error of thinking that fortifications in themselves place the seal of safety on a place, even when garrisoned by an adequate garrison. The battle of Nanshan and the capture of Port Arthur show that the mere passive defence of fortifications, however strong, when opposed to a resolute enemy, will fail in the end. Thus if any of our fortifications are to be resolutely attacked we must set a time limit on their value as an economiser of men; still the time so gained may be of the greatest value. Thus the keynote of the argument so far is that the fortification must be subservient to, and not dictate, the strategy of the campaign.

Now carrying our bed-rock principle on to the battlefield we shall find the same broad principle whether the action starts from our point of view with attack or defence. Let us first consider it from the point of view of defence. Here we must digress for a moment to observe that there are three kinds of defence, the nature of the defence affecting to some extent the tactics employed:—

Firstly, there is what we may call the delaying, or containing defence such as a rear guard or flank guard might fight. Here the object is to merely delay the enemy, and counter-attacks will be rarely resorted to. Fortification, by magnifying resisting power, and extending the line of resistance, may afford much aid, but unfortunately in such actions there are rarely time and tools sufficient to do much work. However, where a series of positions is clearly marked out, something may be done by sending parties of Engineers back early to do what they can to prepare the next position, leaving a small party to carry out the final demolition of bridges after the rear guard has passed them.

The second kind of defence we may call the “holding on” defence. An action of this sort might take place where an advanced guard, or advanced party, is pushed ahead to seize, and hold, some important position until the main body can come up. If tools and time are available it is obvious that fortification will greatly assist such an action by possibly strengthening the flanks, enabling a wider front to be taken up, so entailing delay on the enemy in his attempts to turn the position; or by rendering vital points in the position secure for a sufficient period to enable reinforcements to arrive. You will observe that these two actions are what may be classed as Minor

Tactics. Passive defence enters largely into their nature owing to force of circumstances, and there is less chance of that harmful use of fortification than in the third case about to be considered.

We now come to the third case; where a force uses the defence as a *direct* means of inflicting defeat on the enemy. We find that the same bed-rock principle comes in that we considered in a strategic sense, but now it takes a tactical guise. What is the decisive point? and how can we direct the greatest force against that point?

Our position must invite, or compel, the enemy to attack us while we hold strong forces ready to attack him when his efforts have placed him at a disadvantage. The decisive point can only be gained by a vigorous offensive. Our superiority at the decisive point can be aided by economising our troops in the defensive first line, and by careful choice of the moment when we relinquish the attitude of defence for that of offence. As assets on our side we may hope for the enemy to suffer loss of men, loss of control, separation of forces, or exposure of his line of retreat in his efforts at attack. These considerations light up at once the aid that fortification may confer on the offensive-defensive, and at the same time on the harm that may arise if its proper use is not understood. We are faced with the principle that tactics must dictate the fortification, and not fortification the tactics. To allow entrenchments, however strong, to engender the idea that their strength will effect any decisive result without an offensive rôle elsewhere will be disastrous. Just in proportion as they contribute to the chances of success in our attack elsewhere so will they be usefully employed and rightly understood. As Sir George Clarke has said, "It will be found to be generally true that fortification, whether permanent, or field, whether inland, or on a seaboard, is of value only out of regard to the operations that may be carried on outside its immediate rayon."

We will now take the question of attack. Can the tactics of attack be aided by fortification? The answer will be found when we remember two considerations that have arisen out of the increased power of fire-arms:—

- (a) The difficulty of reconnaissance, strength of the defence against direct attack, and the difficulty of developing flank attacks will make it necessary to secure one point of vantage as a stepping stone to the next.
- (b) The increased time necessary will generally prolong the attack over one day, so night may afford the opportunity of strengthening intermediate points to render them secure against counter-attacks, and to use them more effectively to develop covering fire.

Now to return to our friend the bed-rock principle the same two questions arise in its application to the attack. What is the decisive point? and how are we to become superior at that point? The decisive point may be one threatening the enemy's line of retreat, or one dominating his position, or a weak point in his position.

We must give the enemy credit for taking special measures to protect himself in the first two cases, and in the third case the weak point may not be easy to find. Whatever objective is selected for the main attack we must endeavour to minimise the defender's strength at that point by compelling him to maintain troops elsewhere. His defenders at other points must be chained to their positions by our threatening, or even attacking, those positions. Our troops so threatening, or attacking, are making a containing attack. Here we may get some aid from fortification. The containing attack must be secure against the enemy's counter-attacks. Wide turning movements may necessitate considerable gaps, and we must assume that the enemy has an ever watchful general reserve ready to assume the offensive should we make a mistake. If our containing attack can form an impenetrable screen there is more chance of our main attack making use of the element of surprise. Thus again we use fortification as a means to assist decisive effect being attained outside its immediate rayon.

You will notice I said the containing attack may have to attack in order to effectively hold the defenders to their defences. What can we do to mitigate the unpleasantness of a direct attack on entrenchments? Our friends the artillery supply the answer. Cover the advance of the infantry by raining shrapnel on to the enemy's trenches, and so spoil his aim up to the last moment possible, then increase the range so as to catch his supporting troops in rear. From this very important attack maxim the defenders also draw a guiding principle. Study every means of making it difficult for the attacking artillery to locate and range the trenches, and guard against any chance of their being enfiladed.

Concealment becomes of the utmost importance, and even proximity to a conspicuous object, or to any marked accident of the ground may help the artillery to range.

Let us now briefly notice a few illustrations from military history :—

TALavera.

After some fighting between the Spanish forces and the French the Spaniards joined Wellington at Talavera, and Victor, the French General, was reinforced by forces from Madrid. The French forces numbering 56,000 then assailed the allies (Spaniards and British) 53,000 in a battle that lasted two days.

The right of the British position was naturally the strongest, embracing the town and high ground.

The Spaniards were much demoralised after a recent defeat. Wellington therefore posted them on the right, and rendered it almost unassailable with a few rough redoubts; a convent prepared for defence, ditches, mud walls, breastworks, and felled trees. These fortifications, by enabling him to hold his right with the Spaniards, put more British troops at his disposal for the fierce bayonet charge that hurled the French down the hill the second day.

TORRES VEDRAS.

Wellington after fighting the battle of Talavera was threatened by Soult and Massena who were advancing from the north. His base was Lisbon. He retired from Spain into Portugal, then towards his base pressed by Massena whose idea was to drive him southwards into the sea.

Nature had drawn the rude outline of a strong defensive position near Torres Vedras, the left flank resting on the sea, and the right on the river Tagus. Wellington's fortifications perfected this defensive position. Mountains were scarpes, rivers dammed, and inundations formed, roads for the enemy destroyed, communications for the defenders improved, weak points were strengthened by works, while cannon placed on inaccessible points commanded the approaches. The works were disposed so as to command, and enfilade, every approach, and to support each other by cross and flanking fire. They were formed in two lines, the two making up a total of 50 miles. Massena's 3rd Corps numbered about 66,000 infantry and 6,000 cavalry. Wellington could only oppose these with about 48,000 infantry, and 3,000 cavalry, of which half were untried Portuguese Levies.

Wellington fought Massena in what may be called a delaying action at Busaco, then retired behind his double line of defences, his army massed, and ready to move on any point by interior communications. The French spent five months before these defences wasting numbers and resources, then were forced to retire from Portugal, closely followed, and harassed, by the army whom they had previously driven out of Spain.

The lines foiled one of the ablest Generals and a veteran French army. Their influence on the campaign was very great, not by the direct infliction of defeat in their immediate rayon, but by the respite afforded to Wellington's forces, at a critical time, which enabled him to make preparations for the future advance.

PLEVNA—1877.

The Russians began by underestimating their requirements and found themselves in a numerical inferiority in Bulgaria. Twenty thousand Turks repulsed 9,000 Russians in the first battle. A second Russian attack on the Turkish position, naturally strong, and which had been well entrenched in the meantime, resulted in a second repulse of the Russians. Their position was now critical. The question was,—should Osman Pasha's victory be turned to account? The Turks, however, busied themselves in adding to the defences of Plevna. The Turkish advance hung fire. The strategical opportunity was lost. The Roumanian army was ready to hand and the arrival of strong Russian reinforcements changed the situation.

The defences of Plevna comprised closed redoubts supplemented by trenches with ample overhead cover. The Turks sought to attain the maximum amount of protection from projectiles compatible with the use of their rifles, and wholly irrespective of the tactical

limitations involved. Once settled down in these works they seemed to have regarded passive defence as an *end*, instead of a mere *means* to victory.

Thence forward the fortifications of Plevna, however interesting from a passive-resistance point of view, lost all real importance. It is true they repulsed several assaults and inflicted great loss of life, but their existence was the direct cause of the loss of Osman's whole army, which eventually had to surrender.

It is interesting to note that the Russians learnt the necessity of being prepared at once to strengthen a captured position. Skobelev said "when a soldier in our army advances to the attack over difficult ground, especially on a hot day, he relieves himself first of all of his entrenching tool. When the troops attain a position that they ought to hold they have no means of covering themselves from the enemy's fire." Thus in the third battle before Plevna they scratched the hard ground with hands, bayonets, swords, and mess tins, in vain. After that the men of the 16th Division carried spades weighing more than 5 lbs. each from Plevna to Constantinople.

In the American Civil War, 1861—1864, fortification was profusely employed on both sides, a large part of the contest being a war of positions. Materials for extemporising defences abounded, and natural talent for field engineering was available. While the effect of these entrenched positions was to cause great slaughter of the assailant when he attacked them direct, and imposed slow turning movements, and delay, on him when he attempted to turn them, yet the Atlanta campaign showed that mere reliance on entrenchments, unaccompanied by a vigorous offensive, may delay the enemy, but will do no more. The Northerners pressing forward to gain Atlanta turned position after position taken up by the Southerners.

The Northern General, Sherman, made in one case, that of Kenesaw mountain, a direct assault, and was repulsed with a loss of 3,000 men, yet the Northerners eventually gained their objective. The use made of entrenchments in the attack was remarkable in this war. When the assailant found the enemy strongly entrenched, he entrenched a position in front of the defenders in order to form a barrier behind which he could move his troops to make the turning movement. This either resulted in a retreat of the defenders to another entrenched position further back, or to an extension of the defender's flank. We find numerous illustrations of this in the campaign in the Wilderness of Virginia in 1863 and 1864, and in the Atlanta campaign.

The Battle of Chancellorsville affords an illustration of the inutility of mere entrenchments with a flank insecure. The Northerners entrenched a strong position with their left flank on a river. Their right was rather *en l'air*. Lee made a containing attack, aided by entrenchments in front, and sent Stonewall Jackson to make a wide turning movement against the Northerners right flank. The turning movement took nearly all day to get round, but made its way through the thickly wooded country unperceived by the

Northerners and arrived in time to roll up the right of their position. We can find in nearly every campaign illustrations of the principles that have been enunciated.

In the Franco-German war of 1870-71 both sides employed field defences, but while the French used them largely for passive defence, the Germans used them chiefly for purposes of investment. The Germans regarded field fortification as an expedient for delaying an enemy with a view to give time to bring up troops rather than as a specific means of obtaining a victory. The value of slight works against front attack was strongly asserted in this war, and much fighting took place for the possession of villages, which, when prepared for defence, proved to have considerable resisting power. The importance of roughly fortifying a position as soon as it was captured was strongly shown, and the intimate connection between tactics and field defences was powerfully affirmed.

Coming to later times we find the passive defence of Arabi Pasha's entrenchments at Tel-el-Kebir, and the Mahdi's defence of the Zariba at the Atbara gave little aid to the defenders.

In the Boer war we heard a great deal of "Jims" in the shape of Boer trenches, bottle-shaped trenches, dummy trenches, covered ways and gun emplacements, but I think I am correct in saying that there were few, if any, instances of the Boers using entrenchments as an aid to the counter-attack.

Finally in the present war we find at the battle of the Yalu, Russian trenches badly placed in exposed positions in order to meet a frontal attack, insufficient preparations to meet the inevitable flank attack, and absence of the grand counter-attack that one expects from the scientific defence.

The battle of Kinchau, or Nanshan, forms one of the most remarkable illustrations of the failure of fortifications, when not rightly understood; remarkable because of the very great strength of the fortifications that were constructed. The neck at the narrowest part of the Liaotung Peninsula was only two miles across. The Japanese had command of the sea to this extent that they had four gunboats on the west in Kinchau Bay, but the Russians had a gunboat in Hand Bay. For some time the Russians had been fortifying a strong position across the neck to cover Dalny and Port Arthur. Batteries, strongly emplaced, occupied the more commanding ground. Seventy guns were placed in fourteen batteries, and were aided by eight machine guns and two field batteries of quickfirs. Redoubts, connected by entrenchments, were constructed to sweep the approaches to the position. The trenches in many cases were in tiers, and roofed over with timbers. The whole of the front was further protected by barbed wire entanglements, pits with stakes in them, and mines. The Russians appear to have considered the position so strong that they do not seem to have made arrangements for any counter-attack on a large scale. Their only counter-attack was towards the left of the Japanese 3rd Division. Had it been pushed in strength, and with determination, it might have rolled up the

Japanese 3rd Division, and struck the 1st Division as the latter recoiled several times from the fire of the Russian works.

The Russians withstood a tremendous bombardment and repelled nine assaults, but in twelve hours the position was carried. The weak point was the Russian left flank. The Japanese 4th Division made its way along the coast and waded through the sea. These troops received considerable assistance from the covering fire of the Japanese gunboats. The position was carried at sunset with a loss of 4,200 out of 45,000. The Russians lost 830 out of 13,400 and 78 guns.

The disparity in losses of men speaks much for the protective qualities of the Russian works. Their loss in guns, and the fact that the position was carried, speaks volumes for the uselessness of fortification not rightly understood, when opposed to a resolute and skilful General with troops of valour. The General who completely subordinates field fortification to tactical requirements will make the best use of this valuable auxiliary and will render it always useful and *never* harmful.

2ND ESSAY BOMBAY COMMAND, 1904.

By MAJOR R. G. BURTON, 94th RUSSELL'S INFANTRY.

SUBJECT.

"A narrative of the leading events of the Russo-Japanese War of 1904 up to and including the 31st August 1904, with remarks on the possible future resultant changes in tactics; and criticising on any leading features of strategy or tactics which have occurred during the campaign."

1. The strategy of campaigns, and in fact the whole course and progress of the operations of war, is so far dependent upon politics that no useful narrative of the leading events of the war in the Far East can be given without some account of the political situation prior to its outbreak. It is also necessary for a proper elucidation of the events of this contest arms to describe the character of the opponent nations, for human psychology enters largely into military science, to make some remarks on the armament of the contending hosts; and to describe generally the topographical features of the theatre of operations, for these form the principal factors in both strategy and tactics.

2. The primary cause of war lay in the Russian advance to the Pacific, in the course of which that Power, in combination with France and Germany, had deprived Japan of the fruits of her victory over China in 1894, forcing her to give up Port Arthur, which she had occupied by right of conquest, and which was soon afterwards seized and fortified by Russia as the terminus on the Pacific Ocean of the Trans-Siberian Railway. It was this action which caused Japan to commence at an early date preparations for a conflict which her statesmen regarded as inevitable. The danger of the situation was further accentuated by the Russian occupation of Manchuria, and, finally, by Russian aggression in Korea, where Japan had acquired material and moral interests, and the absorption of which into the Muscovite Empire would, owing to its geographical position, have constituted an obvious menace to the national existence of the Japanese. The situation became intolerable to Japan, who was, moreover, prepared to back by force of arms the measures demanded by diplomacy. In August 1903 a Japanese diplomatic note proposed the basis of an agreement defining the interests of the two Powers in Manchuria and Korea. In December the Russian Government replied in a note that was considered unsatisfactory in Tokio. Negotiations continued, but were eventually broken off in February by the assumption of hostilities on the part of Japan, prior to or simultaneously

N.B.—This essay was written in September 1904. Opinions expressed therein are therefore open to modification in the light of subsequent information.

with the despatch of an official declaration of war. The fact is that neither party could find a *modus vivendi* to meet the situation. The Japanese were unable to relax their demands, for reasons already stated; the Russian Government could not view with equanimity Japanese predominance in Korea, which would give them command over the narrow Korean Straits, and so cut the line of communications by sea between Vladivostok and Port Arthur. That would interfere with Russian aspirations for the establishment of a Far Eastern Empire, nor could Russian prestige brook retreat at the dictates of an Asiatic nation. It must be noted that we have in this political situation the first lesson in strategy. Japan was ready to enforce with adequate military force the demands of diplomacy. Russia had committed the error of permitting politics to outstrip military measures, and the march of events found her quite unprepared for the conflict. This fact was to influence the whole course of the war.

3. The conflict of nations is greatly influenced by the character of their Governments and institutions, and by the nature of the *casus belli*. On the part of the Japanese the war was entered upon with national existence, or at least national progress, at stake, and consequently with the full assent of a people whose patriotism almost amounts to fanaticism, and whose constitutional Government is favourable to free institutions. The Russian Government, on the contrary, being autocratic or rather bureaucratic, has not the sympathy of the populace, particularly in this Far Eastern enterprise, remote from the Fatherland. The moral element was, in consequence, preponderant on the side of the Japanese, and was augmented by their alliance with Great Britain. The Russian army entered upon the campaign with all the stolid courage of the Slavonic race, but with none of that enthusiasm which inspired the ranks of their opponents. The second important strategic factor is thus deduced in the moral superiority of the Japanese cause and character.

4. Numerically the opposing forces were unequal. The Russian warships in the Far East alone, apart from those in European waters, exceeded in number those of the Japanese. But the latter had more modern vessels, many of the Russian ships being obsolete while the personnel of the Japanese navy, which was modelled on that of Great Britain, was better trained in every respect.

The land forces of the Czar greatly exceeded those of the Mikado. Russia is said to be able to put 3,000,000 men into the field; Japan only 500,000.* But it has to be remembered that the armed strength of a country depends not merely on the possession of a numerous fighting force, however efficient, but on the force it is able to place

* Subsequent events seem to show that this estimate is considerably below the mark.

on the theatre of war at the decisive point and moment. In respect of armament and equipment the two armies were on fairly equal terms, but the Russian cavalry was greatly superior. Physically, the finer physique of the Russians was balanced by the exceptional activity and bodily training of their opponents, whose intelligence also was of a higher order.

Another factor which influenced the campaign must not be forgotten. On the side of the Japanese we find unity of command, and concentration of effort towards the strategic objective. On that of the Russians—a dual control, the dispositions of the Commander of the Army being interfered with by the Viceroy of the Far East, and these divided councils further influenced by the Supreme Authority in St. Petersburg.

5. By mutual consent China, with the exception of Manchuria, was regarded as neutral territory. The theatre of war, therefore, resolved itself into the Korean Peninsula, the Province of Manchuria, and the seas that washed the coasts. To this may be added Vladivostok, where comparatively insignificant operations have taken place.

Korea forms a Peninsula some 500 miles in length, and from 100 to 300 in breadth, divided from Manchuria on its northern boundary by the Yalu river, a broad and shallow stream whereon the Russians had formed a settlement for working a timber concession. It possesses good harbours at Chemulpo, the port of the chief town Seoul, and at Chinnampo, both on the west coast, and another at Gensan, on the opposite side of the Peninsula. The country is broken and mountainous throughout. The only line of rail was from Chemulpo to Seoul, but the Japanese laid down a light railway from Seoul to Fusan, a port on the extreme south, and only 100 miles from the Japanese coast, at an early stage of the war. From Seoul a road runs northward through Ping Yang to Wiju, across the Yalu through Antung, and from thence by way of Feng-hwan-cheng over the Motien Pass to Liao-yang.

Bounded by the Amur and Ussuri rivers on the north-east, Manchuria stretches for a thousand miles into the heart of Asia, Mongolia lying beyond its western border. To the south, between Korea and Shan-tung, it narrows down into the Liao-tung Peninsula, at the extremity of which, on the smaller Kwang-tung Peninsula, the Russians had made the fortified naval base of Port Arthur, and the fine town and harbour of Dalny. Northern Manchuria is watered by the Sungari river, and the southern region by the Liao-ho, a tributary of which the Taitse flows to the west just north of Liao-yang. Through this vast territory, which is characterised by a succession of mountain ranges, offshoots from the main chain which runs from south-west to north-east, the Russians have constructed the extension of the great Siberian Railway, through Harbin—where a branch goes off to Vladivostok—

Mukden, Liao-yang, Tashichao—where there is a branch to Niuchwang—to Port Arthur and Dalny. The climate of the whole of this region is extreme—almost arctic in winter and tropical in summer,—whilst the rains of July and early August render military operations most difficult at that season of the year.

6. Some features of the situation have been presented in the foregoing remarks. "The secret of war," said **Strategic situation.** Napoleon, "lies in communications," and a glance at the map will show the immense advantage the Japanese had in their insular position and proximity to the scene of operations, particularly if they could secure command of the sea. Their base of operations was within a few hours' steam of the theatre of war, to which the Russians had but a single line of rail 5,000 miles in length, broken at one point by Lake Baikal, and threatened throughout its length in Manchuria by bands of Chunchus robbers. The Japanese were favoured by similarity of race with the people of the mainland, and by their practical knowledge of the field of operations gained in the war with China in 1894. The nature of the theatre of war gave the Russians little opportunity for utilising their superiority in the mounted arm.

The main Russian fleet was at Port Arthur with a detachment at Chemulpo, and they had a smaller fleet at Vladivostok. The Japanese fleet was mainly concentrated in the Korean Straits. The Japanese army had been mobilised, and it is said that 250,000 men stood ready to take the field. Some few troops were at Fusan and Masampho, and *en route* to Seoul. With regard to the Russian army, it is very difficult to give any reliable details. The advanced base of the army was at Harbin. Other forces were at Niuchwang and on the Yalu, whence some 4,000 men had advanced into Korea. There was a large force at Port Arthur, which was deemed impregnable, and Vladivostok was occupied. The slender line of communications, on which alone Russia had to depend if she lost command of the sea, absorbed a great number of men. Its length rendered difficult the reinforcement and supply of an army in the field. It will be seen, then, that the Russians were scattered and unprepared for war; they were exposed to attack at Port Arthur, and they had a long line to defend. The Japanese, on the other hand, were able to concentrate all their forces by sea against the Russian fleet, and, having gained command of that element, to land at any point they chose to select.

7. History abounds in instances of the commencement of hostilities without declaration of war, and in **The outbreak of war.** no war has such a seizure of the initiative had more important results than that which began, on the night of the 8th February 1904, with the attack on the Russian fleet at Port Arthur. It is a signal lesson in strategy showing the necessity of preparedness for war; for although war had not been formally declared, diplomatic relation had been broken off, and it was obvious that hostilities might break out at any moment. The Russians, then, should have been at least tactically ready for the event.

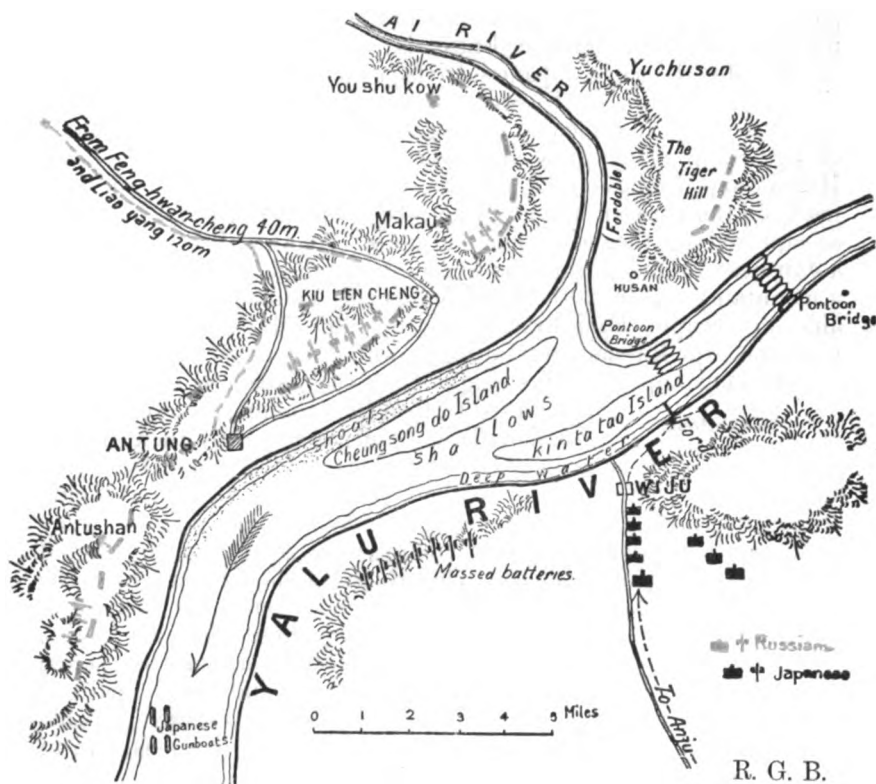
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Battle of Kiu-lien-cheng.

The high ground about Husan was the highest on the field of action. By the 20th April the two armies faced each other and were establishing themselves in the positions indicated. The Japanese concentrated for action at Wiju; the Russians extended along a front of 20 miles, with their main force at Kiu-lien-cheng. Reconnaissances ensued on both sides, and it was not until the 26th April that the Japanese commenced active operations for forcing the passage of the Yalu. The battle resolved itself into two



ROUGH SKETCH OF THE FIELD OF KIU-LIEN-CHENG.

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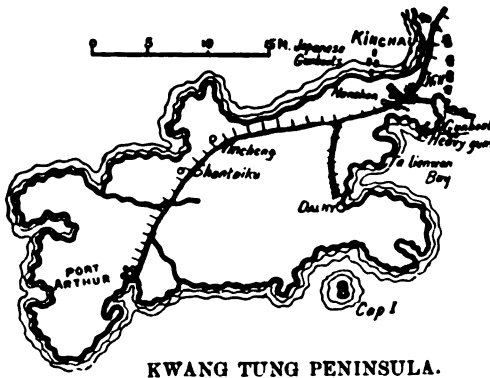
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Peninsula, where important events were in progress. In the middle of February the Japanese made a desperate but unsuccessful attempt to seal Port Arthur harbour; other attempts were made, and at length the entrance was partially blocked early in May. On several occasions Port Arthur was bombarded from the sea, and some minor naval engagements took place, in which the Russians were invariably worsted. One of the most noteworthy strategic features of the war, particularly in its early phases, was the reticence of both belligerents regarding their plans and movements, due to the strictness of the censorship, and the muffling of the war correspondents, the curse of

modern armies. This secrecy is no new lesson, but its necessity may well be impressed on commanders, especially in the light of our own recent experience. On April 13th the Russian battleship "Petro-pavlovsk," with Admiral Makaroff on board, was blown up by a floating mine, a fate which subsequently befell the Japanese battleship "Hatsuse" and other vessels. The tactical importance of such mines was fully proved. On receipt of the news of the forcing of the passage of the Yalu, the Japanese 2nd Army, under General Oku, which had been assembled at Chinnampo in strategic support of the 1st Army, was landed near Pitsewo. From thence an advance was made to a line of hills north of Kinchau on May 16th. It will be seen that a narrow neck of land lies between Kinchau and Nanshan, south of which the Russians held a position from shore to shore.

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was commanded by Mt. Sampson, 6 miles to the east, behind which after a reconnaissance of the Russian position on May 21st, General Oku massed his infantry, nearly 30,000 strong. On Nanshan hill, it was discovered by reconnaissance, the Russians had 78 guns and 10 forts; a battery of heavy guns was on their right, supported by a gunboat in the bay. On the morning of May 26th the battle opened with an artillery duel which lasted three hours, in which a Japanese squadron of four gunboats in Kinchau bay took part. The infantry in close order was then launched to the attack, but was beaten back time after time with heavy loss until late in the evening when the 4th Division, some of them wading through the shoals of the bay got in upon the Russian left. The other two Divisions surged forward, and in an hour the defenders were driven out, and the position was in the hands of the Japanese. They had lost 4,000 killed and wounded in the encounter and the Russians about 850, as well as 68 guns and 10 machine guns. This battle has been adduced as an instance of the possibility of taking by frontal assault a fortified position, but it is doubtful if the Japanese would have been successful had the gunboats not turned the Russian left, and brought a rear and enfilade fire upon their defences. It was followed by the seizure of Dalny and the effective blockade of Port Arthur on the land side. It exemplifies the value of sea power from a tactical point of

2ND ESSAY BOMBAY COMMAND, 1904.

BY MAJOR R. G. BURTON, 94th RUSSELL'S INFANTRY.

SUBJECT.

"A narrative of the leading events of the Russo-Japanese War of 1904 up to and including the 31st August 1904 with remarks on the possible future resultant changes in tactics; and criticising on any leading features of strategy or tactics which have occurred during the campaign."

1. The strategy of campaigns, and in fact the whole course and progress of the operations of war, is so far

Introduction.

dependent upon politics that no useful narrative of the leading events of the war in the Far East can be given without some account of the political situation prior to its outbreak. It is also necessary for a proper elucidation of the events of this contest arms to describe the character of the opponent nations, for human psychology enters largely into military science, to make some remarks on the armament of the contending hosts; and to describe generally the topographical features of the theatre of operations, for these form the principal factors in both strategy and tactics.

2. The primary cause of war lay in the Russian advance to the Pacific, in the course of which that Power

Political situation.

in combination with France and Germany, had deprived Japan of the fruits of her victory over China in 1894 forcing her to give up Port Arthur, which she had occupied by right of conquest, and which was soon afterwards seized and fortified by Russia as the terminus on the Pacific Ocean of the Trans-Siberian Railway. It was this action which caused Japan to commence at an early date preparations for a conflict which her statesmen regarded as inevitable. The danger of the situation was further accentuated by the Russian occupation of Manchuria, and finally, by Russian aggression in Korea where Japan had acquired material and moral interests, and the absorption of which into the Muscovite Empire would, owing to its geographical position, have constituted an obvious menace to the national existence of the Japanese. The situation became intolerable to Japan who was, moreover, prepared to back by force of arms the measures demanded by diplomacy. In August 1903 a Japanese diplomatic note proposed the basis of an agreement defining the interests of the two Powers in Manchuria and Korea. In December the Russian Government replied in a note that was considered unsatisfactory in Tokio. Negotiations continued but were eventually broken off in February by the assumption of hostilities on the part of Japan prior to or simultaneously

A.H. This essay was written in September 1904. Opinions expressed therein are those of the writer in the light of his subsequent investigations.

with the despatch of an official declaration of war. The fact is that neither party could find a *modus vivendi* to meet the situation. The Japanese were unable to relax their demands, for reasons already stated; the Russian Government could not view with equanimity Japanese predominance in Korea, which would give them command over the narrow Korean Straits, and so cut the line of communications by sea between Vladivostok and Port Arthur. That would interfere with Russian aspirations for the establishment of a Far Eastern Empire, nor could Russian prestige brook retreat at the dictates of an Asiatic nation. It must be noted that we have in this political situation the first lesson in strategy. Japan was ready to enforce with adequate military force the demands of diplomacy. Russia had committed the error of permitting politics to outstrip military measures, and the march of events found her quite unprepared for the conflict. This fact was to influence the whole course of the war.

3. The conflict of nations is greatly influenced by the character of their Governments and institutions, and by the nature of the *casus belli*. On the part of the Japanese the war was entered upon with national existence, or at least national progress, at stake, and consequently with the full assent of a people whose patriotism almost amounts to fanaticism, and whose constitutional Government is favourable to free institutions. The Russian Government, on the contrary, being autocratic or rather bureaucratic, has not the sympathy of the populace, particularly in this Far Eastern enterprise, remote from the Fatherland. The moral element was, in consequence, preponderant on the side of the Japanese, and was augmented by their alliance with Great Britain. The Russian army entered upon the campaign with all the stolid courage of the Slavonic race, but with none of that enthusiasm which inspired the ranks of their opponents. The second important strategic factor is thus deduced in the moral superiority of the Japanese cause and character.

4. Numerically the opposing forces were unequal. The Russian warships in the Far East alone, apart from those in European waters, exceeded in number those of the Japanese. But the latter had more modern vessels, many of the Russian ships being obsolete while the personnel of the Japanese navy, which was modelled on that of Great Britain, was better trained in every respect.

The land forces of the Czar greatly exceeded those of the Mikado. Russia is said to be able to put 3,000,000 men into the field; Japan only 500,000.* But it has to be remembered that the armed strength of a country depends not merely on the possession of a numerous fighting force, however efficient, but on the force it is able to place

* Subsequent events seem to show that this estimate is considerably below the mark.

on the theatre of war at the decisive point and moment. In respect of armament and equipment the two armies were on fairly equal terms, but the Russian cavalry was greatly superior. Physically, the finer physique of the Russians was balanced by the exceptional activity and bodily training of their opponents, whose intelligence also was of a higher order.

Another factor which influenced the campaign must not be forgotten. On the side of the Japanese we find unity of command, and concentration of effort towards the strategic objective. On that of the Russians—a dual control, the dispositions of the Commander of the Army being interfered with by the Viceroy of the Far East, and these divided councils further influenced by the Supreme Authority in St. Petersburg.

5. By mutual consent China, with the exception of Manchuria, was regarded as neutral territory. The theatre of war, therefore, resolved itself into the Korean Peninsula, the Province of Manchuria, and the seas that washed the coasts. To this may be added Vladivostok, where comparatively insignificant operations have taken place.

Korea forms a Peninsula some 500 miles in length, and from

(i) Korea. 100 to 300 in breadth, divided from Manchuria on its northern boundary by the Yalu river, a broad and shallow stream whereon the Russians had formed a settlement for working a timber concession. It possesses good harbours at Chemulpo, the port of the chief town Seoul, and at Chinnampo, both on the west coast, and another at Gensan on the opposite side of the Peninsula. The country is broken and mountainous throughout. The only line of rail was from Chemulpo to Seoul, but the Japanese laid down a light railway from Seoul to Fusan, a port on the extreme south, and only 100 miles from the Japanese coast, at an early stage of the war. From Seoul a road runs northward through Ping Yang to Wiju, across the Yalu through Antung, and from thence by way of Feng hwan-cheng over the Motien Pass to Liao-yang.

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(ii) Manchuria. Manchuria stretches for a thousand miles into the heart of Asia, Mongolia lying beyond its western border. To the south, between Korea and Shan-tung, it narrows down into the Liao-tung Peninsula, at the extremity of which, on the smaller Kwang tung Peninsula, the Russians had made the fortified naval base of Port Arthur, and the fine town and harbour of Daini. Northern Manchuria is watered by the Sungari river and the southern region by the Liao ho, a tributary of which the Ta-tse flows to the west just north of Liao-yang. Through this vast territory, which is characterised by a succession of mountain ranges, offshoots from the main chain which runs from south west to north east, the Russians have constructed the extension of the great Siberian Railway, through Harbin—where a branch goes off to Vladivostok—

Mukden, Liao-yang, Tashichao—where there is a branch to Niuchwang—to Port Arthur and Dalny. The climate of the whole of this region is extreme—almost arctic in winter and tropical in summer,—whilst the rains of July and early August render military operations most difficult at that season of the year.

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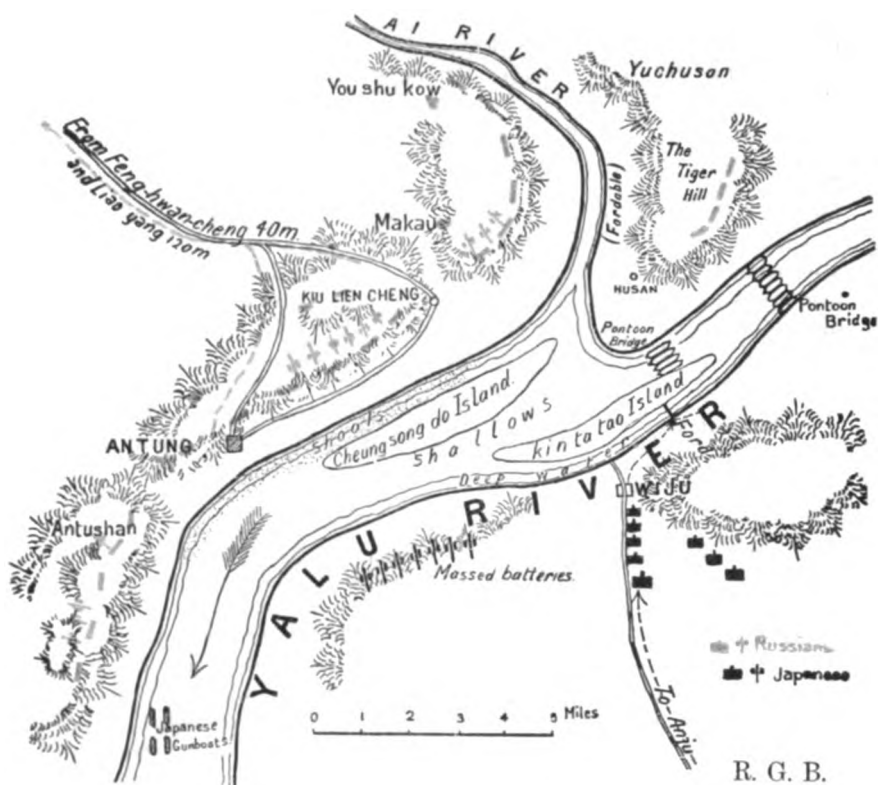
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9. The scene may now be shifted to Korea, where, simultaneously with the event above narrated, a force of 3,000 Japanese infantry landed on the 8th February, under cover of a small squadron of warships. Leaving a detachment at Chemulpo, these troops marched to Seoul, obtaining another moral and strategical advantage by the occupation of the Korean capital. There were at Chemulpo two Russian warships, the "Varyag" and "Korietz" which were next day destroyed by the Japanese squadron in an action outside the harbour. These two ships should have been with the Russian fleet at Port Arthur or Vladivostok; they served no useful purpose at Chemulpo, and a grave tactical error was committed in placing them there. Meanwhile a considerable Russian force had been assembled north of the Yalu, and some 4,500 had crossed that river, and occupied Wiju, Chosan, and Anju. The main body was gradually reinforced until General Sissulitch had some 15,000 men concentrated on the Yalu, with a base at Feng hwan cheng. In the meantime the Japanese 12th Division, which had been landed at Chemulpo, had been marching northward and occupied Ping yang while before the middle of March the remainder of the 1st Army, amounting in all to some 50,000 men under General Kuraki, had landed at Chinnampo, now free of ice, and at Gonsan. Ping yang thus formed a base with communications with the sea on both flanks for an advance to the Yalu. There is not space here to describe the great difficulties encountered and the skirmishes which took place during the march to the Yalu. Suffice it to say that the Russians were pushed back and eventually retreated across the river taking up an entrenched position on the northern bank, and the Japanese advanced guard entered Wiju on the 4th April.

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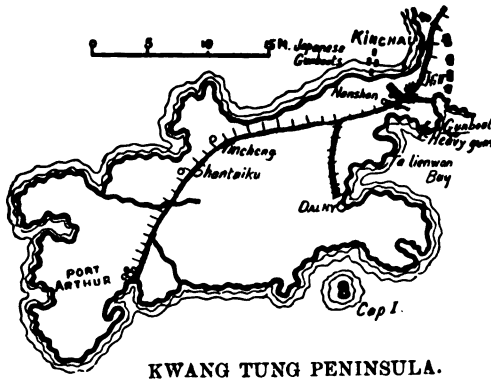
II. It is now time to return to naval warfare and the Liaoting Peninsula, where important events were in progress. In the middle of February the Japanese made a desperate but unsuccessful attempt to seal Port Arthur harbour, other attempts were made, and at length the entrance was partially blocked early in May. On several occasions Port Arthur was bombarded from the sea and some minor naval engagements took place, in which the Russians were invariably worsted. One of the most noteworthy strategic features of the war, particularly in its early phases, was the reticence of both belligerents regarding their plans and movements, due to the strictness of the censorship, and the muzzling of the war correspondents, the curse of

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KWANG TUNG PENINSULA.

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view, and illustrates the co-operation of land and sea forces. The Japanese gradually pushed forward towards Port Arthur and established a state of siege which, up to the end of August, was characterised by desperate and unsuccessful attempts to take the fortress by assault; it is, as the place still holds out, and in the absence of an authenticated account of its progress, an operation of minor importance in this narrative; but it may be remarked that it has yet to be shown that a modern fortress can be captured by other than regular and methodical measures of reduction.

13. While the events above narrated were being enacted, General Kuropatkin had been receiving reinforcements at Liao-yang, and had pushed forward a portion of his forces beyond the passes to the south and east of that place. By the end of May his troops held a general line from Niuchwang on the right through Haicheng to Saimatse on the left. Kuroki meanwhile had been engaged in strengthening his alignment with Feng-hwan-cheng as his centre, while fresh forces landed at Takushan eventually formed a central army under General Nodzu, and moved northwards, keeping in touch with Kuroki on the right, and ultimately effecting a junction with Oku on the left.

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23. The Russian headquarters were at Liao-yang; the bare, precipitous hills to the south and south-east had been strongly fortified; the place was of strategic importance as its possession would give the Japanese complete domination over South Manchuria, while, being the last tactically strong position before Tiehling, it opened the way to Mukden. On August 26th, when the Japanese attacked all along the front, the

Russians had taken up advanced positions at Pitesu and Anping on the left flank, at Liandian in the centre, and at Anshanchan on the right flank. Kuroki advanced against the Russian left, and the armies of Nodzu and Oku against the centre and right. On the 27th, a Japanese force made a turning movement on the left flank of the position at Anshanchan, the Russian right withdrew to Liao-yang, and the left was driven back, but retired in good order after a stubborn contest, and the whole army was concentrated on the 29th, one corps occupying a position on the right bank and another on the left of the Taitseho. On the 30th and 31st Generals Oku and Nodzu resumed their attacks, but were everywhere repulsed, the Russians making vigorous counter-attacks. Meanwhile the main body of Kuroki's army had crossed to the right bank of the Taitse-ho, and was turning the left flank of the Russian position, with a view to acting against their line of communications in the direction of Yentai. Thus, at the close of the 31st August, we find the situation to be—the Russian army tactically holding its own at Liao-yang against the attacks of Oku's and Nodzu's corps, but with its communications strategically threatened by Kuroki. In view of this latter consideration, General Kuropatkin decided to retire from Liao-yang, and concentrate his whole force in an offensive movement against Kuroki. With this object he commenced crossing the Taitse-ho on the night of the 31st.

24. Many strategical and tactical points have been noted in the foregoing paragraphs, and both space and **Russian Strategy.** our present limited knowledge of events demand that the campaign should be regarded more from its broad strategical aspect than with a view to minor tactical details. Owing to the unprepared state in which the outbreak of war found the Russian Government, General Kuropatkin had to gain time for the arrival of reinforcements. With this object in view the whole series of actions up to the battle of Liao-yang must be regarded as delaying actions, in which the Russians could hope: not to defeat but to delay the enemy. This object may be considered as attained in so far as a sufficient force had been assembled at Liao-yang to stem for a time the Japanese advance, and check them south of Mukden. The full results of Kuropatkin's strategy were not yet apparent on August 31st. Some have held that Port Arthur should have been abandoned, but prestige demanded its retention, and it served a further purpose in detaining a Japanese army.

25. The Japanese appear to have been slow in pursuit, both **Japanese Strategy.** strategical and tactical, but difficulties of country and supply have to be considered. Tactically, the containing power of modern fire-arms appears to enhance the difficulties of pursuit. They would have done better to have retained, during the latter half of August, only a sufficient number of troops for effective investment. For this a comparatively small force should have sufficed, and the remainder of the Port Arthur army might have turned the scale in the attempt to destroy the

main Russian army at Liao-yang. On August 31st, although the issue of the battle was not decided, the Japanese did not appear to have a sufficient force to compass the destruction of their magazines. This division of objective and force, where concentration of effort was so necessary, was a strategic error.

26. There do not appear to be any features of tactics which affect the future, for these have not departed

Tactics. from accepted principles, which are capable of broad interpretation. The chief lesson of the war lies in the necessity it shows for preparedness—national, strategical and tactical. It has shown that the bayonet is not obsolete, and it reminds us that the human factor is pre-eminent in war, and that without the valour of the soldier all the skill of commanders, all the examples of history, all theoretical knowledge of the art of war, can avail but little on the day of battle.

THE PRESENT MOUNTAIN ARTILLERY EQUIPMENT.

By W. K.

Before the South African war it was the custom to say that we had the finest artillery in the world, and it would have been rank heresy for anyone to have breathed a doubt on the subject. If the assertion is taken to refer to the training, morale and horsing of our Artillery, far be it from me to contradict this flattering opinion. If, however, it refers to the efficiency of the whole, it will now be generally conceded that, in Field Artillery, the French were immeasurably ahead of us, in that they had a gun capable of developing three times the fire effect of our weapon though erroneously considered by us to be too complicated and delicate for the stresses of actual service in the field. The gun with which the Mountain Artillery were expected to compete against modern Q.-F. Artillery was of course an absurd anachronism. Firing as it did black powder, it was lacking in the attribute on which Mountain Artillery largely depend for safety against heavier ordnance, *viz.*, "invisibility," whilst in every other respect it was equally behind the times.

That there is little necessity or opportunity for the dashing tactics on which the British Artillery prided themselves, and which they found so successful on the "Long Valley" was amply demonstrated by the actual war, and still more has this been established by the Russo-Japanese campaign.

In the latter stages of that war the performances of the Russians with their 1902 model Q.-F. Gun conclusively proved the enormous power of this style of weapon as compared with the older types, whilst it has been amply demonstrated that it must be very exceptional circumstances which will prevent determined men from getting their guns into action, however bad the country or deficient the transport.

Desiderata of a field gun. The most efficient gun for service in the field is one which fires—

- (i)—the heaviest shell,
 - (ii)—at the quickest rate,
 - (iii)—to the greatest range.
- consistent with sufficient mobility.

In the 18½-pr. Q.-F. we may congratulate ourselves on having a weapon, which fulfils all the above conditions in a higher degree than the Field Gun of any other nation.

But supposing that the latter stages of the Boer War had been taken as the normal campaign for which we required our Field Artillery, should we not then have kept our 15-pr. equipment which possessed great mobility and indestructibility, but only moderate fire effect, and was well fitted to accompany rapidly moving columns operating against an enemy without artillery, over very difficult country.

The merest tyro would, however, at once have seen the absurdity of such a course and would have exclaimed against the obvious mistake of subordinating the vital requirements of the country to comparatively unimportant issues.

And yet this is exactly what has been done in the case of the Mountain Artillery as I propose to show.

The choice of a Mountain Gun depends on which of the two following is considered the more important :—

Our Requirements in a Mountain Gun.

(i) —Are we to consider the *raison d'être* of our Mountain Artillery in India to be the suppression of disturbances amongst frontier tribes possessing great mobility but no artillery. (Analogous to the Boer Commando in the latter stages of the war) ?—or

(ii) —Are we to consider the possibility of a war with a first class power (such as Russia) armed with Modern Artillery and threatening our existence in India, and look upon (i) as of secondary importance ?

As in the case of the Field Artillery, there is no getting away from the fact that the latter consideration and it alone should be considered in connection with Mountain Artillery. In the present Mountain Gun (the 10-pr. B. L.) I propose to show that as far as (i) is concerned rearmament was a needless expense, whilst the equipment in no way answers the requirements of (ii) and that we have in fact fallen between two stools.

Let us assume for a moment that (i) is the correct view to take as to the use of Mountain Artillery, and let us see to what extent the 10 pr. B. L. is superior to the 2·5 R. M. L. which preceded it.

Tribal Warfare.

- (i) Its range is greater.
- (ii) Its shell is heavier.
- (iii) Rate of fire slightly quicker.
- (iv) Less mobile since the ammunition is heavier.
- (v) More delicate being a breech loader and therefore liable to be damaged by being thrown down on its breech.

No. (v) may seem an absurd contingency, but until quite recently it was considered an undisputed axiom by other than Mountain Gunners that a breech loader was far too delicate for Mountain Artillery. We will return to this later.

Now the above comparison shows that the 10 pr. is superior in fire effect but more delicate and slightly less mobile than the 2·5 R. M. L. which it replaced. In considering operations against frontier tribes where the effect of Artillery is more moral than actual, these may be said to merely balance each other. The advantage of smokeless powder over black powder in warfare of this description is not so very marked, and though one cannot but think that the introduction of the 10 pr. was due to a desire to remove the open shame to which we were put by the use of black powder in South Africa, the corresponding gain did not justify the expense. The number of Batteries maintained is likewise excessive for this work.

Now let us consider conditions such as those under the second heading, *viz.*, the invasion of India or Afghanistan by Russia,—without going into details which are beyond the scope of this paper, it may be taken for granted that—

Real Use of Mountain Artillery.

- (i) the most probable point of contact with a European power is the frontier of India and Afghanistan;
- (ii) apart from treaty obligations it would be expedient to check any advance on the frontier of the latter;
- (iii) even if Field Batteries in sufficient numbers could be got there, the country is such that many operations could only be undertaken by Mountain Artillery;
- (iv) we should probably be inferior in numbers;
- (v) this is best compensated for by a highly trained and well equipped Artillery;
- (vi) we are, therefore, more interested in the development of Mountain Artillery than any nation, except possibly the Swiss, who have a Q.-F. Mountain Gun.

Now (as for a Field Gun) what is required is a gun which combines maximum fire effect with sufficient mobility. Unfortunately since the fire effect is only seen once a year at practice, whilst any defect in mobility is seen every day on parade, the peace tendency is always to exaggerate the importance of the latter at the expense of the former. It is undoubtedly due to an exalted idea of what "sufficient mobility" means that we owe the selection of the 10-pr. B. L. at a time when Q.-F. Guns were in the market. Some in India and nearly all at Home imagine that the mountain gunner spends his time negotiating impossible inclines or scrambling along the edges of precipitous *khuds* over which he drops a mule at intervals.

It would be just as reasonable to suppose that the Horse Artillery are always galloping over *nullahs* killing men and horses. Both sometimes happen, but it is the exception rather than the rule. As mentioned before, until quite recently a breech loader for Mountain Artillery was looked upon as out of the question and yet no difficulties appear to have been experienced with them in Tibet, which is a fairly mountainous country, nor do the guns appear to have been thrown on their breech ends. By analogy we may go one step further and assume that the idea of the unsuitability of Q.-F. Ordnance for Mountain Artillery is as erroneous as that which condemned the breech loader, and considered Q.-F. Guns too delicate for Field Artillery. There is nothing extravagant in this, provided that the Officer Commanding a Mountain Battery is admitted to possess his fair share of common sense—enough in fact to enable him to take reasonable precautions on difficult ground, even to carrying the more delicate loads by hand over nasty places, in the same way that Q.-F. Horse Artillery Batteries will presumably nurse their guns over bad ground. The traditions of the Mountain Artillery are such that the ability and willingness of the gunners themselves, to get their guns into action in any situation cannot for one moment be doubted.

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The choice of a Mountain Gun depends on which of the two following is considered the more important :—

Our Requirements in a Mountain Gun.

(i)—Are we to consider the *raison d'être* of our Mountain Artillery in India to be the suppression of disturbances amongst frontier tribes possessing great mobility but no artillery. (Analogous to the Boer Commando in the latter stages of the war)?—or

(ii)—Are we to consider the possibility of a war with a first class power (such as Russia) armed with Modern Artillery and threatening our existence in India, and look upon (i) as of secondary importance?

As in the case of the Field Artillery, there is no getting away from the fact that the latter consideration and it alone should be considered in connection with Mountain Artillery. In the present Mountain Gun (the 10-pr. B. L.) I propose to show that as far as (i) is concerned rearmament was a needless expense, whilst this equipment in no way answers the requirements of (ii) and that we have in fact fallen between two stools.

Let us assume for a moment that (i) is the correct view to take as to the use of Mountain Artillery and let us see to what extent the 10-pr. B. L. is superior to the 2.5" R. M. L. which preceded it.

Tribal Warfare.

(i)—Its range is greater.

(ii)—Its shell is heavier.

(iii)—Rate of fire slightly quicker.

(iv)—Less mobile since the ammunition is heavier.

(v)—More delicate being a breech loader, and therefore liable to be damaged by being thrown-down on its breech.

No. (v) may seem an absurd contingency, but until quite recently it was considered an undisputed axiom by other than Mountain Gunners that a breech loader was far too delicate for Mountain Artillery. We will return to this later.

Now the above comparison shows that the 10-pr. is superior in fire effect but more delicate and slightly less mobile than the 2.5" R. M. L. which it replaced. In considering operations against frontier tribes where the effect of Artillery is more moral than actual, these may be said to merely balance each other. The advantage of smokeless powder over black powder in warfare of this description is not so very marked, and though one cannot but think that the introduction of the 10-pr. was due to a desire to remove the open shame to which we were put by the use of black powder in South Africa, the corresponding gain did not justify the expense. The number of Batteries maintained is likewise excessive for this work.

Now let us consider conditions such as those under the second heading, *viz.*, the invasion of India or Afghanistan by Russia,—without going into details which are beyond the scope of this paper, it may be taken for granted that—

Real Use of Mountain Artillery.

- (i) the most probable point of contact with a European power is the frontier of India and Afghanistan;
- (ii) apart from treaty obligations it would be expedient to check any advance on the frontier of the latter;
- (iii) even if Field Batteries in sufficient numbers could be got there, the country is such that many operations could only be undertaken by Mountain Artillery;
- (iv) we should probably be inferior in numbers;
- (v) this is best compensated for by a highly trained and well equipped Artillery;
- (vi) we are, therefore, more interested in the development of Mountain Artillery than any nation, except possibly the Swiss, who have a Q.-F Mountain Gun.

Now (as for a Field Gun) what is required is a gun which combines maximum fire effect with sufficient mobility. Unfortunately since the fire effect is only seen once a year at practice, whilst any defect in mobility is seen every day on parade, the peace tendency is always to exaggerate the importance of the latter at the expense of the former. It is undoubtedly due to an exalted idea of what "sufficient mobility" means that we owe the selection of the 10-pr. B. L. at a time when Q.-F. Guns were in the market. Some in India and nearly all at Home imagine that the mountain gunner spends his time negotiating impossible inclines or scrambling along the edges of precipitous *khuds* over which he drops a mule at intervals.

It would be just as reasonable to suppose that the Horse Artillery are always galloping over *nullahs* killing men and horses. Both sometimes happen, but it is the exception rather than the rule. As mentioned before, until quite recently a breech loader for Mountain Artillery was looked upon as out of the question and yet no difficulties appear to have been experienced with them in Tibet, which is a fairly mountainous country, nor do the guns appear to have been thrown on their breech ends. By analogy we may go one step further and assume that the idea of the unsuitability of Q.-F. Ordnance for Mountain Artillery is as erroneous as that which condemned the breech loader, and considered Q.-F. Guns too delicate for Field Artillery. There is nothing extravagant in this, provided that the Officer Commanding a Mountain Battery is admitted to possess his fair share of common sense—enough in fact to enable him to take reasonable precautions on difficult ground, even to carrying the more delicate loads by hand over nasty places, in the same way that Q.-F. Horse Artillery Batteries will presumably nurse their guns over bad ground. The traditions of the Mountain Artillery are such that the ability and willingness of the gunners themselves, to get their guns into action in any situation cannot for one moment be doubted.

**Comparison of the
10-pr. B. L. with Mo-
dern Q.-F. Equipment.**

Having gone so far let us consider the merits and demerits of the 10-pr. B. L. as compared with Modern Q.-F. Equipment.

As stated before in its favour—

- (1) The power and range of the gun itself is good.
- (2) The loads are not excessive and ride fairly well.

On the other hand—

- (1) The breech mechanism is clumsy and obsolete.
- (2) The cartridge and shell must be loaded separately which necessitates *obturation* and the carriage of ammunition in leather ammunition boxes which are easily damaged.

(3) The firing is by friction tube which entails a separate operation and is slow and uncertain.

(4) The gun recoils violently, is difficult to keep in position in a cramped space, entails much fatigue on the detachment in "running up", requires entirely relaying after each round, and its rate of fire is consequently little if any faster than that of the 2.5" R. M. L., viz., about two rounds a minute where accurate laying is required.

(5) Every load has its own special saddle, and each of these saddles must have a duplicate for relief purposes. Consider what this means in a rear guard action. The Battery Commander must either risk losing portions of his guns or having to bring them off by hand, or he must keep relief mules. He has five or six kinds of saddles, so he must keep at the least about 12 mules, and even then he may have three carriage mules shot, say, when with 10 mules at hand, he cannot put the third carriage on to any of them, and must change the saddle, which takes time and might be fatal. In addition all these extra mules increase the target he offers, and tend to block up the road, when it is most important that it should be clear.

(6) The gun has no shield, and in mountain warfare, where it is comparatively easy for Infantry to get up unseen to close range, it would be quickly put out of action by modern rifle fire. What sort of a chance it would have against a shielded gun, absolutely protected from shrapnel fire, may be left to the imagination.

(7) The trajectory of the gun is flat and renders firing from behind cover, the only position it could safely occupy, somewhat difficult.

(8) Its shell is lighter than that of any of the Q.-F. guns now to be described.

These are—

(I)—The Vickers Maxim.

(II)—The Ehrhardt.

(III)—The Krupp.

The Vickers Maxim is in one piece which is only about half the weight of the 10-pr. B. L. Though this is to a certain extent compensated for by recoil buffers enabling a high pressure chamber to be used, still its range is very much less than that of the 10-pr. B. L.; on the other hand, it fires a 12½ lb. shell, and being much steadier a better rate of fire can be maintained.

Still inasmuch as it is not a long recoil gun and is not absolutely steady, a certain amount of relaying is necessary, and it cannot be looked upon as a quick-firer, and therefore does not meet our requirements for re-arming the Mountain Artillery.

It is, however, superior to the 10-pr. B. L. in many points, notably,—

- (i)—Single motion breech mechanism.
- (ii)—Percussion firing.
- (iii)—Fixed ammunition and excellent means of carrying the same.
- (iv)—A saddle capable of carrying any kind of load.

The gun has been used by us successfully in Africa and Egypt and by the Americans in the Philippines. These latter subjected it to the roughest usage from which it emerged triumphant. It was, however, considered too delicate for our Mountain Artillery.

Owing to a bolt in the cradle all the loads are carried high which makes them a trifle unsteady but no doubt this could be modified, and it in no way detracts from the soundness of the principle. These guns were dragged long distances by the Americans in bad country, a procedure looked upon with disfavour by us, but which will be dealt with later.

The Ehrhardt Q.-F. Mountain Gun is an absolutely satisfactory weapon. Being quite steady in action, a rate of 10 to 13 rounds a minute can be maintained without difficulty. It is, however, a light gun, being about 240 lbs. in weight against the 400 lbs. of the 10-pr. B. L., and its range is consequently very considerably less. The great difficulty in a Q.-F. Mountain Gun of getting a sufficiently long trail which will still go on a mule, has been overcome, by having one which folds up for travelling. At its own ranges one of these guns is probably more than equal to three of our guns, whilst having a shield it is proof against rifle fire.

The Krupp Q.-F. Mountain Gun is a gun similar in power to the Ehrhardt though the details of construction, into which it is not proposed to enter, differ considerably. The main point is that it is a satisfactory Q.-F. gun, absolutely rigid in action, and as such has been adopted by the Swiss Government, who consider it more than equal to three of their former type of gun.

Now the problem before a designer of a Q.-F. Mountain Gun is very similar to that which confronted the producers of the 18½-pr. Q.-F. field gun. Though this is a matter which more concerns the expert, there should be no difficulty in building a gun and carriage, or in possibly adapting the 10-pr. B. L. so as to have a gun with—

- (i) The ballistics of the 10-pr. B. L.
- (ii) The Krupp recoil arrangements.
- (iii) The Ehrhardt folding, or the Krupp jointed trail.
- (iv) The Vickers Maxim breech mechanism and firing arrangements.

- (v) The Vickers Maxim system of carrying ammunition.
- (vi) A universal pattern ordnance saddle.
- (vii) A detachable shield which might be left behind when fighting frontier tribes.

Of all these points the attachment of a jointed gun to a cradle is the only one presenting any difficulty.

Such a gun would be superior to any mountain gun now existing and would more than treble the efficiency of the mountain artillery.

Although the addition of a shield to a mountain gun has not the same advantage as in the case of a field gun, since without the armoured caisson the ammunition numbers must be more or less exposed, still this can be minimised by digging shell recesses and pits close to the side of the gun, and against modern rifle fire it should certainly be added. Whether it is worth while to carry it when operating against hill tribes is open to doubt.

Shields.

The great difficulty with Q.-F. guns is the supply of ammunition and more especially is this the case with mountain artillery. But with a Q.-F. gun, and without wishing to enter in vexed question of 4 vs. 6 gun batteries, it is obvious that fewer guns will do the same work, and that therefore by a reduction from 6 to 4 guns a large number of mules would be set free for carriage of ammunition.

There are also other ways in which a saving might be effected; principally the following:

On first joining the Burma Military Police I found that an old Sikh native officer who had been in charge of two equally ancient 7-pr. guns for some months had, during that time, never taken them more than 25 yards away from the gun park, because, as he very justly observed, "the stones were apt to dent the tires." I personally was always given to understand that pulling mountain guns was a crime as "it wore out the axles." Now one is just about as reasonable as the other. Since then those same 7-pr. guns have been dragged for over 1,000 miles over all sorts of country by a pair of mules, and though the wheels are a trifle looser, the guns shoot no more inaccurately than they did in the first instance, nor have the wheels or axles been otherwise damaged. The American experience with the Vickers Maxim guns in the Philippines was similar to the above.

The Japanese establishments for their mountain batteries appear according to our standard absurdly inadequate, but they sufficed to enable the batteries to accompany Kuroki on his march through mountainous country from the Yalu to Liaoyang where they did excellent service. The reason of this was that they travelled with the guns in draught wherever possible, and there is no doubt that an immense economy in mule flesh is effected by this very simple means.

Even if the present large establishment of mules plus the addition for quick-firing gun ammunition is not considered excessive,

it must be remembered that in the case of war with a first class power the mortality amongst the mules must necessarily be large, and probably very considerably more than the remount authorities could attempt to replace, and for this we should be prepared. A jointed pole with a cross bar is very easily carried and, apart from the saving to the mules on the line of march, might mean the difference between abandoning or bringing away guns. Even if reduced to only two mules per gun, the mobility of the guns would be equal to that of field guns in the hills, and would suffice to get them in and out of action. With two or three handy men on the drag ropes to prevent the guns upsetting it is astonishing what rough ground can be successfully negotiated in this manner.

SUMMARY.

The remarks *re* shields and draught at the end of this paper are of minor importance, and lest they should obscure the real points at issue, let us once more recapitulate the requirements of the Mountain Artillery in India.

(i) To get rid of the idea that a suitable mountain gun is one which the mountain gunner, however rough and clumsy he may be, cannot possibly damage.

(ii) To substitute the fact that he is every bit as capable of looking after and utilising Q.-F. equipment as any one else.

(iii) To recognise that the 10-pr. B. L. is obsolete, and that no amount of tinkering can make it anything else.

(iv) To rearm the Mountain Artillery with a jointed Q.-F. gun combining the range of the 10-pr. with the rate of fire of foreign Q.-F. ordnance.

Although of secondary importance, and consequent on the above, there may be added—

(1) To provide a universal pattern saddle to carry every load.

(2) To reduce the relief mules and increase the ammunition mules.

(3) To look upon the relief mules as spare, to replace casualties and therefore to keep them unencumbered with line gear and other impedimenta.

(4) To utilise a system of draught to relieve gun line mules whenever possible.

As matters now stand it would appear that, with regard to foreign nations, we are in exactly the same position in respect to our Mountain Artillery as we were in Field Artillery to the French at the beginning of the South African war, and that if the penny-wise-and-pound foolish policy is followed, which sent Mountain Batteries armed with 2.5" to South Africa, and until lately kept up expensive establishments to work 7-pr. R. M. L. guns and even denied these latter a metal time-fuze, there is every chance of our remaining so.

Without attaching undue importance to Mountain Artillery, it seems that a step which would treble its efficiency might be included at the very earliest opportunity in the measures now being taken for safeguarding the frontiers of India.

RECONNAISSANCE PANORAMAS.

By MAJOR G. F. MACMUNN, D.S.O., *p.s.c.*, R.F.A.

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Of all the "tiresome" jobs which the officer in peace time is called on to perform, there is none more resented and disliked than the annual "sketch" road report, or position reconnaissance, by those who have no natural aptitude for it. This may largely be due to the uninteresting way in which military sketching has been taught in the past. To make men with no turn for drawing do large plane-table sketches, is to fill them with distaste for an art which in its practical form is an essential acquirement to every officer. It may, perhaps, comfort those whom sketching wearies, to know that in the always-to-be-admired and often-to-be-copied armies of the Continent, sketching is as much insisted on by the authorities, and as much disliked by the regimental officer, as in our service.

Military sketching is dear to those responsible for training an army, because it teaches the lie of country better than any other known method, to those who have not a natural eye. No man who does not grasp quickly the natural lie of the land can be a good tactical leader of an arm, especially in civilized warfare.

The accurate plane-table sketch however is never required in practice from the ordinary officer, a specialist can always be procured when such is needed, and the valuable sketcher for soldiering purpose is the man who in a few strokes can give a reasonably accurate and unmistakably clear hand-sketch to illustrate a report he may be making.

The man who can crawl among the ant heaps in front of his outpost and give a clear impression of what he sees is a very valuable person. Almost more so is the man who can ride over a piece of country and then put it down with workable accuracy from memory on a piece of paper.

In reconnoitring an enemy's position it is not possible however to ride over his ground, and the most valuable report that can come is a good panorama or freehand drawing of the country he holds, as seen from accessible ground. To sit down and make a good outline sketch of this sort is to give a General the most useful sort of report he can have. A still more valuable attainment, especially for a mounted officer, is the power to retain such panoramas on the retina of the memory, putting them on paper later as opportunity offers.

The teaching of panorama sketching to officers without previous knowledge or practice of freehand drawing is far easier than it seems; any one who cares to take a little trouble can very soon acquire a useful proficiency, while the practice of drawing panoramas from

memory, or rather the impressing of them on one's memory, is always an amusement on a ride. When you have acquired the art your friends will regard you as a facile imposter, but that does not matter.

The value of a panorama to a commander giving orders for the attack to a large force of artillery is evident, and the making of such is a useful accomplishment of the artillery reconnoitring officer, or

~~"the officer in charge of the scouts of the artillery."~~

actually tracing with pen and ink, a stilo pen for choice, on a window pane, a view that is visible from it. An exact tracing of an actual landscape as seen from the eye is thus obtained.

Turning now to the difficulty often found in getting the right proportion in one's panorama, or in knowing how much paper to allow, the following "Jim" will be found very useful. First take a piece of cardboard about the size of a half sheet of notepaper and cut out the centre so as to leave a frame of about half an inch margin, the view-

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The value of a panorama to a commander giving orders for the attack to a large force of artillery is evident, and the making of such is a useful accomplishment of the artillery reconnoitring officer, or whatever we call the officer in charge of the scouts of the artillery brigade. Panoramas executed in copying pencil can be rapidly reproduced from a gelatine copying tray, a thing very easily carried in a satchel, by a brigade clerk.

The attached panorama of Cronjé's position at Magersfontein was executed in blue chalk from an ant heap in front of redoubt (a) on the right of our outpost line; assume an imaginary attack on such a position, by a force of say two divisions and some corps artillery—the orders for the artillery, not to mention the other arms, would be immensely assisted by the issue to every brigade and battery commander of a copy, both for understanding the original orders and for issuing further orders later, for change of objective during the fight.

The panorama of Dargai taken during the fight, from a position in our hands several days previous, is the sort of thing that simplifies the issue of attack orders.

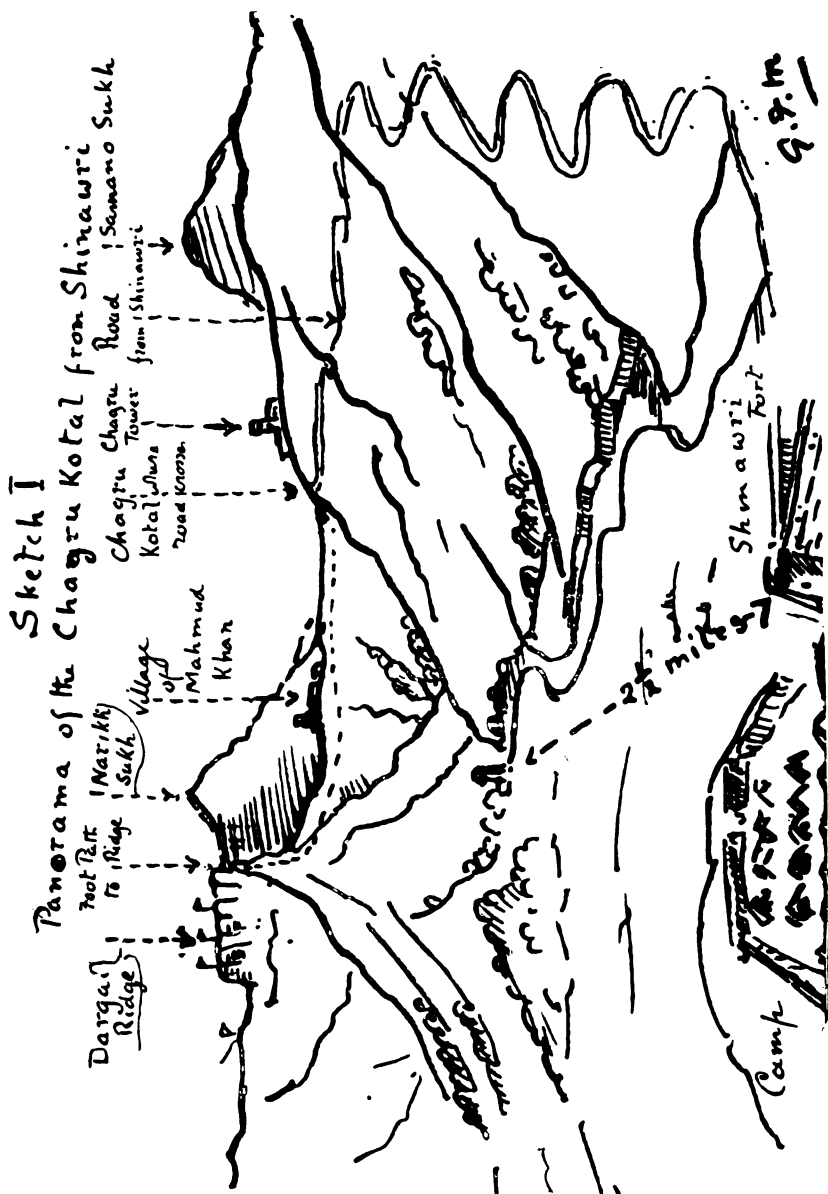
Now, as regards the drawing of such by officers not known to themselves as draughtsmen, the following suggestions may be useful:—
The main difficulties that present themselves are:

- (1) the initial acquirement of drawing a firm line,
- (2) the amount of landscape to be included on a particular piece of paper, and
- (3) the right proportions of the landscape.

The remedy for the first is of course some elementary lessons in freehand drawing, for even the most heavy-fisted of men can be taught to draw a bit, but for those who cannot spare the time, or want the inclination to learn to draw, the following method will be found to give the hands some facility for making panoramas. Take an outline landscape, the panoramas given herewith for instance, and copy them on tracing paper till you get accustomed to making continuous lines that show the shape of ground, then take more detailed views, a war landscape from "Black and White," or an ordinary watercolour sketch and trace from it enough lines to give the shape of the country, omitting all detail. A little practice at this sort of thing will soon familiarise you with outline work.

Further and most excellent practice can then be obtained by actually tracing with pen and ink, a stilo pen for choice, on a window pane, a view that is visible from it. An exact tracing of an actual landscape as seen from the eye is thus obtained.

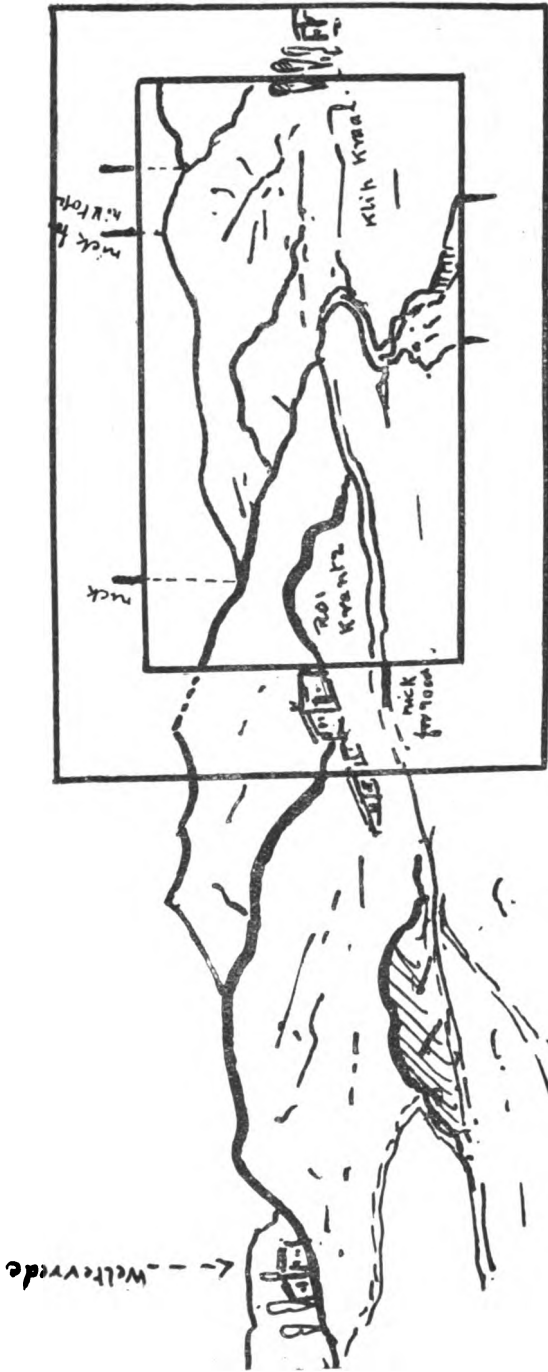
Turning now to the difficulty often found in getting the right proportion in one's panorama, or in knowing how much paper to allow, the following "Jim" will be found very useful. First take a piece of cardboard about the size of a half sheet of notepaper and cut out the centre so as to leave a frame of about half an inch margin, the view-



finder of the landscape artist in fact. Hold this up when looking at a view in front of the eyes, and it will be seen that a portion of the landscape will be seen framed as it were, in the card. By altering the focus of the card, that is to say, moving it nearer or further from the eye, more or less of the landscape will be visible within the frame.

FIGURE I.

Representing *actual* landscape, as seen from the sketcher, showing portion taken in by the view-finder.



[NOTE.—The view-finder is focussed to include ground between Roi Krantz and Klip Kraal. The other half of the view, from Weltevrede to Roi Krantz, can next be taken. Notice the nicks on the view-finder to mark where prominent features come in the panorama.]

Having moved this view-finder till the portion of the landscape required is duly framed, and then making nicks on the card with a pencil, above or below any prominent features in the landscape, a portion of the latter, the size of the inside of the frame can be outlined on paper, the relative positions of the features corresponding to the distance from each other of the nicks. Similar pencil nicks on the vertical sides of the frame will give the relative distances for the depth of the sketch (*vide* Figure I).

It will however probably happen that the panorama will be required to be two or three times as long as the inside of the frame, and if this be so, the landscape must be taken by sections, and must be divided into as many as are required. In Figure I, the landscape depicted must be imagined to be the actual view (not the sketch of it) with view-finder held in front of the observer. The panorama required must show the country from Weltevrede to Klipkraal Farm, and should be twice the length of the view-finder. The homestead of Roi Krantz appears to be in about the centre of the view, therefore if we focus the view-finder on the portion Roi Krantz—Weltevrede we shall get the right half of our sketch correctly on to a piece of paper the size of the inside of the frame, and can repeat the process for the left half.

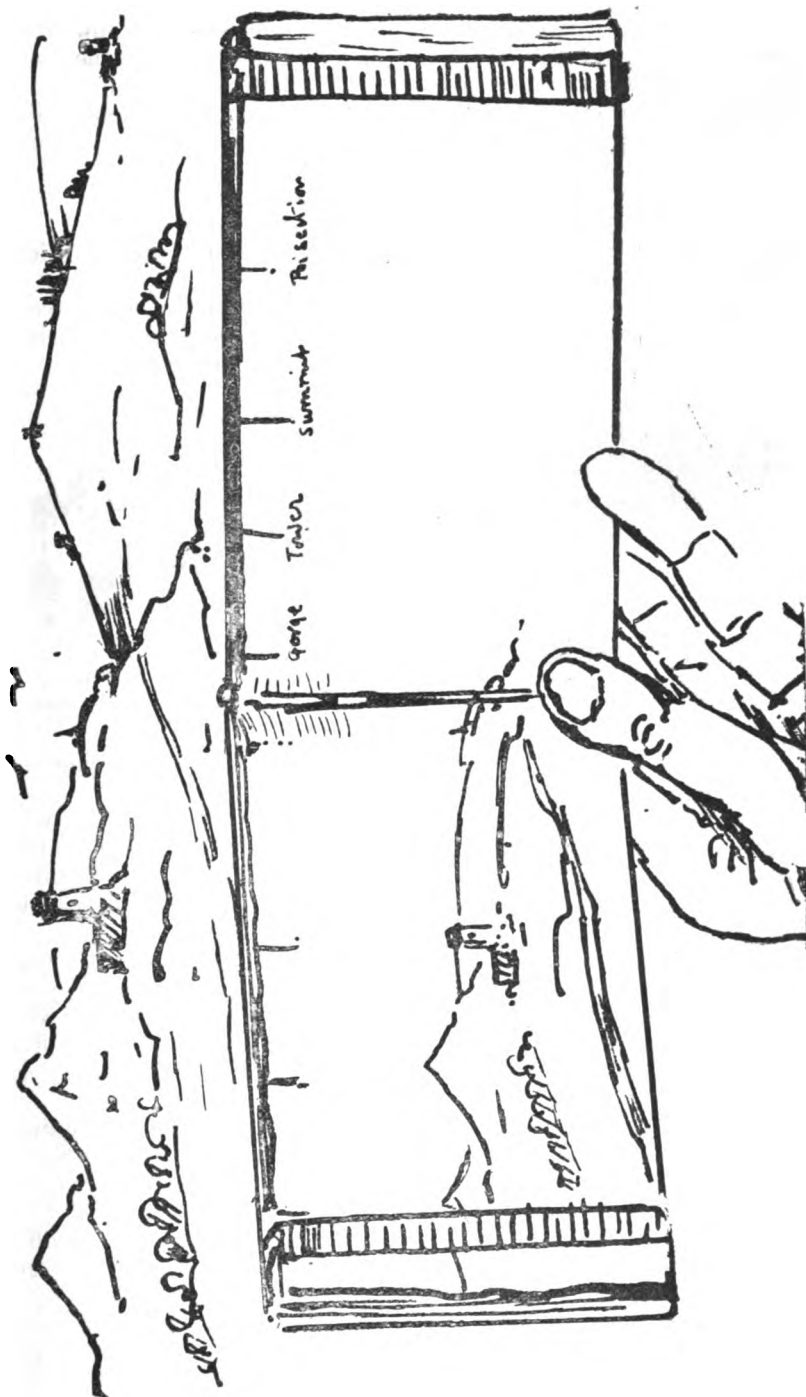
The frame "Jim" is of great assistance to any one, even the expert sketcher, in rapidly getting the proportions for a military panorama. A frame of paper can of course be made at any moment in the field.

Another dodge on the same principal, is to take a piece of talc, or an old quarter plate glass negative with the gelatine scraped off, and use it exactly as described for the view-finder, with this advantage that with a stilo pen or a grease pencil, the actual panorama can be traced on the glass as it is held up in front of the eye.

When taking a view by sections, the glass or view-finder must always be held at approximately the same distance from the eye for any one picture. The above process appears perhaps rather complicated on paper, but is the work of a very few moments in practice.

These methods are however rather the deliberate work of the beginner or the leisured reconnoitrer than of the staff officer in a hurry, and may be developed further for fast work in front of the sniper, as follows:—

A convenient size for a panorama is twice that of a sheet of the ordinary officer's octavo pocket-book—the red one as issued by government, or the size of Gunter's note-book. To use this rapidly, to make a picture on the double page of the open book, open it as shown in Figure II., and focus it so that the open book exactly covers the area to be "panorama-ed." Then lower it so that the top edge of the right half corresponds to the lower edge of the frame in Figure I., and make as before the pencil nicks below the prominent points. With the book still held out in focus, the outline between the pencil nicks can be lightly marked in, and strengthened after. This method is an exceedingly practical and accurate way of doing a panorama in the field.

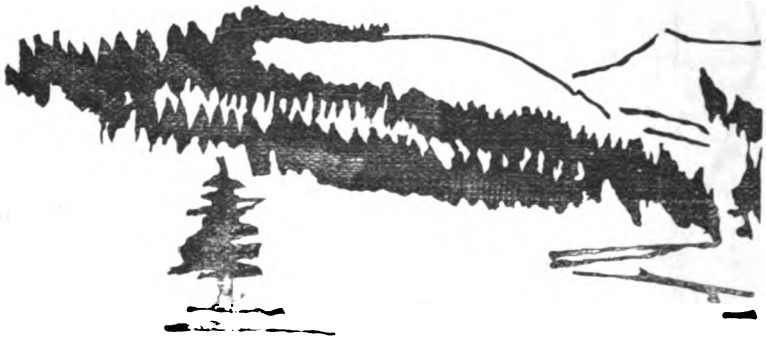


It is hardly necessary to say that an elementary knowledge of perspective is necessary to make a sketch of this sort, and the picture is naturally improved by good draughtsmanship, but simplicity and absence of detail are the important points. If a man cannot draw houses and trees, squares and twiddles will do as well. "Billy" Clifton had an excellent receipt for the latter—

"Turn your pencil round and round
And trees grow up from out the ground."

Above all things avoid ornamentation and combat the desire to put a rabbit in the foreground.

In completing panoramas of a country covered in pine woods, such as the Aldershot neighbourhood, a good effect can be produced in a minute with a quill pen or broad pointed chalk, thus:—



The following points should be remembered in completing a panorama:—

(1) Identify the features as far as possible by writing names above them, and if names are not known, invent them for prominent points, or give letters, *vide* the view of Magersfontein. If this is done the issuing of orders based on copies of the panorama is much simplified.

(2) Always state on the sketch the point from which it is taken and as some panoramas look entirely different from different points opposite them, while others appear much the same from anywhere in front, it is as well to state if it is possible to move along the front, and between what points on the map the landscape bears the same appearance.

(3) All landscapes, especially in rugged and mountainous country, are easier to take, so far as accuracy and a right understanding of features are concerned, in the early morning or late afternoon, when the shadows bring spur and gorge into strong relief.

In the Dargai position, the precipitous gorge between the village of Mahmud Khan, and the slopes of the Narikh Sukh, did not show at all while the sun was high in the heavens.

A PRECIS OF A STUDY OF THE RUSSO-JAPANESE WAR BY "CHASSEUR"—(*concluded*).

BY CAPTAIN G. M. ORR, XITH K. E. O. LANCERS.

From the date of the cessation of the pursuit by the Japanese after the battle of Liao-yang, the manner of the campaign changes; it is no longer the story of armies, on the one side, pushing their way on to a goal, fighting and winning day after day, and on the other side, of a brave soldier endeavouring to gather in and organise an army, which was arriving bit by bit, and with which he hoped to stem the approaching tide. It now becomes the history of a series of battles fought almost on the same field. From September to February, during the time in which the battles on the Sha-ho, and the fighting round Hei-kou-tai took place, the two hosts faced and fought each other in an area, of which the breadth from east to west, from Penhsiho to the Hun-ho, was 50 miles and the depth from north to south, from Mukden to Yentai, was but 30 miles; during the battles round Mukden in the first week in March the breadth from east to west was increased to 90 miles, that is, from Ching-ho-cheng in the east to the Liau-ho on the west; while the depth remained the same.

Before we follow "Chasseur's" descriptions of the great battles, we will draw attention to his views as to the reasons of the Japanese failure to pursue after Liao-yang and of the abrupt halt on the Sha-ho in October. These views are not those of the experts who have supplied reports to the authorities at home. Whereas they consider that the week's fighting before Liao-yang had so perilously reduced the reserves of the Japanese both in men and ammunition that they did not dare to risk another engagement so soon: he prefers to think that Oyama, even during the struggle in front of Liao-yang, was scheming to maintain the Russian army in and about Mukden, in order that he might, in the spring, be able to crush entirely the Russian strength in the Far East. Similarly the order to halt south of the Sha-ho in October was not given because Oyama feared his armies would be unable to push into Mukden, but rather because he wished to encourage Kuropatkin to remain south of Mukden, until the resources of Japan and the fall of Port Arthur gave him two more armies, while at the same time his line of communications became no longer. However, whether it was by design or necessity, the pursuit by Kuroki was stopped on the 6th of September.

NOTE.—In the article published in the January number it was stated that one of Nodzu's divisions was probably the 8th. This should have been the 10th. In his advance to the north Oku is stated to have borrowed only Nodzu's 5th Division, but in reality for the advance Oku had under his orders the 3rd, 4th, 5th and 6th Divisions and Nodzu advanced with only his 10th Division, assisted by a brigade of the Guards from Kuroki's army, until the 5th Division rejoined him in time for the fight at To-mu-cheng on the 31st July, when the Guards brigade rejoined its own division.

The reinforcements, which he had hoped would arrive before Oyama would be in a position to attack him at Liao-yang, had reached Kuropatkin only in time for him to rally his beaten battalions on them. These reinforcements consisted of the 1st European Corps and the 6th Siberian Corps. A month was allowed to elapse before the world was startled by Kuropatkin's proclamation, dated the 2nd of October, in which he announced that he intended to assume the offensive forthwith. For this offensive movement Kuropatkin divided his great army into two parts. To Stackelberg was assigned the Eastern Army, consisting of the 1st, 2nd and 3rd Siberian Corps, while the Western Army, consisting of the 5th Siberian Corps, and the 10th and 17th European Corps, was given to Bilderling. Kuropatkin intended to keep in reserve the 1st European Corps and the 4th and 6th Siberian Corps, the latter of which was still arriving; on the left there was Rennenkampf, with his Cossacks, while on the right was Mischenko's Division of Cavalry. At this time the Japanese line was as follows: The right was composed of Kuroki's three Divisions, the 2nd, 12th and Guards holding the line from Penhsiho on the Taitse-ho to the coal mines; the centre of Nodzu's two Divisions, the 5th and 10th, from the coal mines to Nantai; and the left of Oku's three Divisions, the 3rd, 4th and 6th, westwards across the Sha-ho to Chang-chia-pu. The 1st Cavalry Brigade continued the left to the Hun-ho, while the newly arrived 2nd Cavalry Brigade, which was destined to play a most important part in the forthcoming battle, was in rear of the coal mines.

Kuropatkin's plan was to turn Kuroki's right at Penhsiho with his Eastern Army, and operate along the Taitse valley, while with his Western Army, backed up by his strong reserve, he hoped to compel Oyama to bring all his reserves to his centre and away from the right; there was the hope too of, perhaps, even overthrowing Oku and Nodzu. The plan stood to win or lose by the success of Stackelberg's columns in the mountains against Kuroki's right. On October 6th Stackelberg moved his Corps forward intending to use Wan-yu-pu-tzu as a stepping stone to the occupation of Penhsiho. Bilderling was to push straight down the Mukden road. At the last moment Kuropatkin realised the danger of a gap occurring between Stackelberg and Bilderling and he filled it with the 4th Siberian Corps under Zorubaiev. On the left Stackelberg directed his 1st Siberian Corps on Wan-yu-pu-tzu and the 3rd Corps on a line more to the east, while the 2nd Corps was held back as a reserve. Meanwhile Rennenkampf and his Cossacks made a detour to the east, and on October 8th Samsonoff crossed the Taitse to the east of Penhsiho. Kuroki's position was critical, his advanced posts at Wan-yu-pu-tzu fell back to the Tomin-ling, and those on the Hua-ling were driven back to the ridge in rear. On the Russian right, by the 9th, Bilderling had advanced nearly to the Yentai

[While following "Chasseur's" accurate and interesting narrative of the events, we will take it on ourselves to differ in certain details of the dispositions given by him which it is possible to correct in the light of more recent information.]

branch line, pushing back the Japanese advanced posts, but on the 10th of October Oyama decided to change from the defensive to the offensive,* which as "Chasseur" says was to undertake the most hazardous operation in war. By the night of the 12th Oku's and Nodzu's divisions had gained the line of the Shili-ho after most severe fighting. It was now that the 2nd Cavalry Brigade played so important a part in the operations. On the appearance of the Cossacks south of the Taitse it had been summoned from near Yentai to Kyoto, which was a big store depôt about 15 miles to the south of Penhsiho, and for which it was thought the Cossacks were bound. However, the Cossacks showed no enterprise, and the 2nd Cavalry Brigade reaching Kyoto on the 12th at once pushed northward, drove the Cossacks back, and on the 13th completely surprised the Russian extreme left on the Taitse in front of Penhsiho. By this time Kuroki had been able to so reinforce his right that Stackelberg could make no headway and he gave the order to retire. In the western half of the field the Russians had fared no better. By the night of the 14th when Stackelberg's Corps had retreated back to Wan-yu-pu-tzu, Oku and Nodzu had fought their way to the line of the Sha-ho. Here took place the most severe fighting of all. Kuropatkin, after using all his reserves, had to call on Stackelberg to send him whatever he could spare. As it was Stackelberg had already pushed his 2nd Corps, which had been his reserve, into the gap brought about by the retirement of Zorubaiev's 4th Corps before Nodzu's divisions. Nevertheless, he answered to the call by sending his 1st Corps of Siberians. The most desperate fighting took place round Sha-ho-pu and Lo-sheng-pu, but on the 16th of October the Russians were forced back across the Sha-ho. It was on this day that a detachment of the Japanese, which had been sent to link the armies of Nodzu and Oku together, got cut off and lost very heavily, leaving 14 guns in the hands of the Russians. Beyond the line of the Sha-ho, Oyama forbade any further advance. He had beaten the enemy a second time, but he was not prepared to crush him. This could only be done by numbers, and Port Arthur had not yet fallen, nor had the new army, made by the recall to the colours of the veterans who had passed into the territorial army, yet arrived. So the two armies settled down to winter quarters on opposite sides of the Sha-ho.

Kuropatkin continued to receive reinforcements, and in December the size of his army necessitated its re-division into three, to which were given the titles of 1st, 2nd and 3rd Manchurian Armies. The 1st was placed under Linevitch, comprising the 1st, 2nd and 3rd Siberian Corps, and remained on the left. The 4th, 5th and 6th Siberian Corps made up the 3rd Army and was put under Kaulbars in the centre. The 2nd Army was assigned to Grippen-berg and consisted of the 1st, 10th, 17th and the newly arrived

* Amongst Napoleon's correspondence (*Campagnes d'Italie*, I 101), may be found the maxim that "the change from a defensive to an offensive attitude is one of the most delicate of operations."

8th and 16th, all European Corps. It is difficult to make out which Corps, if any, Kuropatkin kept under his own hand as a reserve. Disagreements among the directing heads seemed to be rife and "Chasseur" tells how it is related that Grippenbergh would tear Kuropatkin's messages in pieces and fling them at the messenger who brought them, while Kaulbars went so far as to box the ears of Sakharoff, the Chief of the Staff! In January there were signs of activity in the Russian host and with the double object of damaging the Japanese communications well in their rear, and of destroying one of their biggest supply depôts, Kuropatkin issued his orders to Mischenko to raid Niu-chwang with a large force: accordingly on January 7th Mischenko concentrated 6,000 Cossacks and several batteries at Pai-chi-pu, 15 miles south-west of Hsin-min-ting. With this force he moved along the Chinese frontier and on the 10th crossed to the left bank of the frozen Liau-ho and then, splitting into four columns endeavoured to carry out his orders by sending two against the supply depôts and two against the railway. But time had been grievously wasted. Though the arrival of this large force on the left bank, so close to Niu-chwang, was a complete surprise to the Japanese the damage which the columns did was but slight, and by the 12th of January Mischenko and his Cossacks were in full retreat to the north.

In a few days' time Russia in Europe was to be on the verge of a great and popular outbreak. Since the defeat on the Sha-ho the only hope in the minds of the Grand Ducal party in Russia was a victory at once, and Kuropatkin was undoubtedly ordered to save the situation by a forward movement, which, even if it did not bring victory, would at least be a counter-irritant.

The country to the west of the railway, in which so much severe fighting was to take place, is described in the *Times* of February 4th as quite level and open, excepting for the villages and burial places, where there were groves of trees, which by January for the most part had been burned for fuel. The villages were roughly about two miles apart, and from the descriptions given must have been very similar to villages in the Punjab.

The only obstacles to an advance across the country were the rivers. They run between high banks and were similar, again, to the bigger nullahs of the Punjab, but, when they were not frozen, they were difficult to ford and their waters ran over muddy bottoms; tracks for carts connected the larger villages. These villages were readily loopholed and put in a state of defence, so that the fighting in such a country naturally resolved itself into a series of struggles for villages on the well marked line of a waterway, which itself marked the general line of defence.

"Chasseur" points out the great difference of the method by which the rival armies safeguarded themselves from any possible defeat of their front lines. The Japanese were careful to prepare a second, and even a third, line of defence within easy distance of their front, so that if, by force of numbers, the Russians were able to

drive them out of their first line they would at once be confronted by the second and again by the third line. The Russians, on the other hand, prepared their second position 40 miles in rear—a position which, as “Chasseur” says, was designed rather to arrest disaster than to form a *point d'appui* for a violent counter-stroke. This difference in military appreciation was to be demonstrated both at the battle of Hei-kou-tai and at Mukden.

What Kuropatkin's plan really was is still a mystery, the object of Gripenberg's movement was undoubtedly to turn the Japanese left flank, but the remainder of the army seemed to have had no objective given them. On the night of January 23rd Gripenberg concentrated the newly arrived 8th and 16th European* Corps, plus Stackelberg's famous 1st Siberian Corps of veterans, between Changtan and Tu-ti-fung on the Hsin-min-ting—Liao-yang road, a few miles to the west of the Hun-ho and in rear of their own defences. At this time the extreme left of the Japanese forward line was resting on the Hun-ho in the strongly fortified villages of Hei-kou-tai and Sandepu and was in close proximity to the Russian's right at Chan-tan-ho-nan. On the night of the 24th Gripenberg, with Mischenko further to the south, crossed the frozen Hun some miles in rear of the Japanese left and launched his Corps across the snow against Hei-kou-tai and Sandepu. The Japanese were taken by surprise and the fighting that ensued was of the most fierce description. However by the 26th Gripenberg realised that all chance of success was gone, for instead of turning the Japanese left he found that his troops, worn out with the hard-earned success of pushing in the first line, were confronted by a second line; in vain he called for the co-operation of Kaulbars and Linevitch in the east and so the fighting continued till the night of the 28th when the Japanese launched so vigorous a counter-attack that the morning of the 29th of January saw Gripenberg back across the Hun-ho, his fine European troops, fresh from St. Petersburg, a broken and defeated rabble.

The losses in this strange battle, in which but a third of each army was engaged, were about 20,000 on the Russian side and half of that amount on the Japanese side. “Chasseur” considers that the troops employed by the Japanese for their great counter-attack on the 29th January were part of Nogi's army, newly arrived from Port Arthur, but we are inclined to believe that Nogi's divisions did not arrive on the line of the Taitse, west of Liao-yang, till February the 19th. His northward move was certainly known to Kuropatkin, but several events that happened in February caused the minds of the Russians to be very unsettled as to the actual dispositions of the Japanese and the nature of their plans.

Almost the same day that Mischenko started on his raid south, a picked body of Japanese cavalry, of the strength of about 150 men, left Hei-kou-tai for a point on the railway 160 miles north of

* It is uncertain whether it was the 10th or the 16th European Corps that was engaged.

Mukden, where it crosses the Hsinkai-ho by a bridge. A month later, on February 11th, this bridge was reached and blown up, with the result that traffic was suspended for a fortnight and, more important still, a force, including a large portion of Mischenko's cavalry was sent by Kuropatkin to clear up the situation in his rear, for he feared a large turning movement. Ever since Oyama knew that he could count on Nogi's army and the new army of reservists under Kawamura, he had been making the most deliberate plans to finally overwhelm the Russian army. The essence of his plans was a large turning movement, though it was to develop in a very different quarter of the field from that in which Kuropatkin expected it. To enable this movement to develop with as great a secrecy as possible on the west, there is no doubt that the raid to the Hsinkai bridge was organised with the deliberate intention of causing the Russians to withdraw their cavalry from the plains, and further, the manoeuvre had the desired result for, as will be subsequently shown, Nogi swept round from the west practically unopposed. Oyama's plans were very nearly upset by Gripenberg's offensive movement against his left in January, for if Gripenberg had maintained his position Oyama would have had to weaken his right flank and centre to strengthen his left, and the season of frost and ice, before the spring thaws had rendered military movement impossible, would have slipped by, with the result that the battle of Mukden would have been postponed, and possibly never have taken place.

In the middle of February the disposition and strength of the Russian forces was as follows:—On the left Linevitch held command over the 2nd, 3rd and 4th Siberian Corps; in the centre Kaulbars had the 1st and 5th Siberian Corps and the 8th and 10th European Corps; on the right Bilderling had taken over Gripenberg's army, consisting of the 6th Siberian Corps and the 1st and 17th European Corps: the Cavalry were still distributed in two large bodies, on the extreme west under Mischenko and in the mountains to the east under Rennenkampf. The 16th European Corps was kept as a general reserve in Kuropatkin's own hand. The *Times'* correspondent, who seems the best informed on the subject, gives their total strength as 26,700 sabres, 300,800 rifles and 34,000 gunners with 1,368 guns. The strength of the Japanese is much more difficult to calculate. The same authority puts their forces down at 400,000 of all arms. The disposition of the five Japanese armies and the objective of each army in the forthcoming battle was as follows:—

On the right Kawamura with his newly arrived army of reservists, which it is believed consisted of three divisions and to which was added the 11th Division from Nogi's army, was in the vicinity of Ching-ho-cheng facing the Ta-ling. His objective was Fushun, which he had to reach by the two paths *via* Tita and Machuntun, both of which places were known to be strongly entrenched. The Russians had also entrenched the Ta-ling defile on the Machuntun road and the attack on it was to be the opening of the battle. On Kawamura's left lay Kuroki, with the 2nd, 12th and Guards' Divisions

about Penhsiho. He was to drive the Russians from their formidable entrenchments among the hills between the Sha-ho and Machuntun and at the latter place join hands with Kawamura's left column. In the centre Nodzu had the disposal of the 5th and 8th Divisions (the 10th Division being put under Oku for the battle). His headquarters were near Shili-ho and he linked Kuroki in the hills on his right with Oku on the railway. His part was, in the first place, to keep the Japanese centre from being broken and, by employing a great force of artillery, to create doubts in the minds of the Russians as to his purpose, and in the second, at the time when Kuropatkin should have finally distributed his reserves, to force the point of least resistance in the Russian line. West of the railway Oku, with the 3rd, 4th, 6th and 10th Divisions, was to make a series of vehement assaults on the Russian entrenchments between the railway and the Hun-ho, and by means of heavy artillery fire to make the Russians believe the main attack would follow the railway, and thus prevent Kuropatkin strengthening his flanks. At the same time he would form a screen from behind which Nogi would develop his great turning movement against the Russian right flank. Nogi's army consisted of the 1st, 7th and 9th Divisions, which at the beginning of the battle lay along the left bank of the Taitse-ho between Tassa-ling and Hsiao-pei-ho. On the extreme left one of the two Japanese Cavalry Brigades was watching the country as far as the Liau-ho. Later, on the 4th March, the other brigade was to join it, forming a Cavalry Division with some batteries and machine guns, for the purpose of acting on Nogi's left against the Russian cavalry in the plains.

As Kawamura had the longest route to follow, and in order that the cooperation of the whole Japanese army might synchronise at the crucial moment, it was necessary that he should begin the operations in advance of the others. On February 19th he took the field in two columns, towards Tita on the right and Machuntun on the left. From the 22nd to the 24th his left column was engaged in hurling itself on the strong defences of the Ching-ho-cheng defile to the accompaniment of a blinding blizzard, but on the night of the 24th Kawamura was able to telegraph that the Taling passes were in his hands. On this very day Kuroki in his turn had begun his advance in three columns, the right column of which operated against the Kau-tu-ling towards Kawamura's left, while the other two were detailed to carry the Russian's defences in the valley of the Sha-ho about Wan-yu-pu-tzu. On the 27th, Nodzu commenced a heavy artillery bombardment against the Russian centre and Oku began his advance between the railway and the Hun, while Nogi appeared echeloned between the Hun and the Liau, with his right at Hsi-tin-tzu and his left at Kaliama; the Cavalry Bridge meanwhile moved to the right bank of the Liau. On the 1st of March, Kawamura and Kuroki were still fighting desperately in the hills; of Nodzu nothing was heard but his artillery: Oku was held up at Changtan, but Nogi's cavalry had appeared at Hsin-min-ting.

Even this did not induce Kuropatkin to turn his attention to his right. From the commencement he had the idea that his left flank would be the Japanese objective and the movements of Kawamura and Kuroki, together with Nodzu's bombardment, seemed to confirm him in his belief that the main attack was directed against Fushun, for on the 1st of March he railed his reserve to that place. This movement of the Russian reserve completely fell in with the Japanese plans.

The advance of Kawamura and Kuroki had not only secured Oyama's right flank but had attracted the flower and bulk of Kuropatkin's reserve to the opposite flank to that from which the decisive Japanese attack was to come. On the next day, the 2nd of March, Kawamura was battling in front of Machuntun while Kuroki was still on the heights above Wan-yu-pu-tzu. Nodzu was preparing to advance against the positions on the Sha-ho east of the railway; Oku had advanced but little, but Nogi's movement took definite shape, for he began his wheel to the east with his left moving through Hsiau-pu-tzu while the Cavalry Brigade passed through Hsin-min-ting. Kuropatkin only now realised that the real menace was coming from the west and he immediately railed his reserve back to Mukden and marched it out to confront Nogi. On the 3rd and 4th the fighting was most desperate all along the line; on the 5th Kawamura was still in front of Tita and Machuntun, but Kuroki had pushed through and established touch with him. Oku had had to send a division across the Hun-ho to Yang-shi-tun to Nogi's assistance, while Nogi himself, opposed by the main body of the Russian right wing, was endeavouring to prolong the line to the north. By the evening of the 5th he reached to Tashi-chiau on the Hsin-min-ting—Mukden road, while the Japanese cavalry, now a division, was still further to the north. From March 2nd to March 7th the issue of the struggle was so undecided that if the Russians had met with a substantial success at any point in the line the battle might have become a drawn one. Up to the 7th, when he received the news that Nodzu in the centre had carried the positions at Sha-ho-pu and was up to the Hun, Kuropatkin had fought with some hope of success, for he had held Nogi and Oku for four days and Linevitch still reported the left secure.

Simultaneously with the news of Nodzu's successful advance came the information that the railway was cut north of Mukden. It had only been damaged by a patrol, but it was the climax, and on the night of the 7th Kuropatkin gave the order to fall back on Tieling. To aid the retirement Kuropatkin fiercely attacked Nogi with the troops that had held his centre, but Nodzu, pressing on past the eastern outskirts of Mukden, came in on the railway to the north; meanwhile Machuntun and Tita fell before Kawamura, and Kuroki, thrusting his divisions between Fushun and Mukden, cut Linevitch off entirely from the remainder of the Russian army. On this date, the 8th, the Japanese Cavalry Division had successfully kept off the Russian cavalry at Ta-hsin-tun. Indeed the inaction

of the Russian cavalry on this occasion was most marked, for notwithstanding its enormous numerical superiority and the great effect its presence could have had on the Japanese left flank, it did absolutely nothing to justify its existence. During the whole of the 9th a violent duststorm had raged which considerably assisted the Russians in their retreat. On the 10th March the last of the Russians were driven in by Oku and suffered very heavily for they had to run the gauntlet of Nogi on the west and Nodzu on the east. By midday the battle of Mukden was over.

Linevitch, who had been unable to join hands with the centre, had withdrawn, and in a more composed manner than the rest, by way of the Wankau passes. On the 16th of March the Japanese, following on the heels of the Russians, passed through Tieling and on the 21st reached Chang-tu-fu, at which place "Chasseur" leaves off his account. In the last few pages of his 10th chapter he tells how the victory of the Japanese at Mukden was a decisive blow against the military power of Russia in the Far East, but that it was not the crushing and exterminating blow that the Japanese hoped it would be; nor was the blow as severe as it has been generally represented; he further considers that the result of the battle was almost as disastrous in its military paralysis to the victors as to the vanquished; and that finally to this paralysing effect on her military resources may be traced Japan's magnanimity at the peace arrangements at Portsmouth. According to the account of the "*Times*" correspondent the losses on the Russian side were 30,000 dead, 100,000 wounded and 40,000 prisoners, or 170,000 casualties in all, while on the Japanese side only 50,000 are given, a statement which is open to a good deal of doubt. "Chasseur" believes their casualties were at least as many as those of their enemy.

We will continue the narrative of the war without "Chasseur's" help. By the end of March the thaw set in and military movements on a large scale became impossible. All through April, May and June the two hosts again lay facing one another; while they endeavoured to make good their losses and bring up their supplies. Roughly the front of the two armies lay along a line from the Liau through a point about 20 miles north of Chang-tu-fu to the road from Tieling to Kirin, though there was a Japanese force of some description in the vicinity of Hai-lung-cheng among the mountains to the east. In the north Linevitch had superseded Kuropatkin in the chief command and had his headquarters at Kung-chu-ling (Guntzuling) about 60 miles north of Chang-tu-fu on the railway. His latest reinforcement was the 4th European Corps. During this time both sides made use of their cavalry for raids. Mischenko in the west moved against Fakumen, and a squadron of Japanese reached Omoso 70 miles east of Kirin. This latter raid, and the former one to the Hsinkai bridge, were both fine achievements. In June the whereabouts of the remainder of the army of reservists disclosed itself under Hasegawa in north-east Korea. His mission was to press back the Russians on that flank into Vladivostok and at the same time, by moving along

the Tumen valley, to act as a bait to draw a portion of Linevitch's army away, though it is doubtful whether he was far enough forward to do this. The Japanese now appeared in yet another quarter. The victory of Togo at Tsushima on the 28th of May had cleared the seas of the enemy and made the conquest of Sakhalin feasible. With this object two supernumerary divisions, the 13th and 14th, were organised from men of the 2nd reserve, and, leaving Japan under the command of Haraguchi, were in complete possession of the southern half of the island by the middle of July. A base for operations against Vladivostok from the north could now be established on the Amur, but by the end of August peace was assured, and the need for any further military operations happily came to an end.

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Note.—Only villages mentioned in
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Photo-Mechl. and Litho. Dept., Thomas

Co., Zinco., February, 1906—No. 1435. 2025.

OUR INDIAN CAVALRY.

A Reply to A Plea for the Silladar.

BY MAJOR J. R. MATHEWES, 27TH LIGHT CAVALRY,
BRIGADE-MAJOR, SECUNDERABAD CAVALRY BRIGADE.

A large number of officers of "Our Indian Cavalry," besides many readers of Military subjects in India, could not fail to have read with considerable interest, a paper by Captain E. Tennant, 20th Deccan Horse, entitled "A Plea for the Silladar," which appeared in the issue of the Journal of the United Service Institution of India for October 1905. Its author states that "we (*silladar officers*) all *know* our system to be a good one," yet it is evident that he himself realises the system is open to adverse criticism, for anything that is really good, should require no *excuse*, *apology*, or *urgent entreaty*, which I believe to be the meaning of the word "*plea*."

This plea was prompted by a pamphlet containing certain articles from the "Pioneer" and "Madras Mail" and a reprint of two schemes for the reorganisation of Native (*Silladar*) Cavalry Regiments, contributed to the U. S. Journal for April 1904, by Colonel C. S. Wheler, 6th (P. W.) Cavalry, which was privately circulated in September of that year. Captain Tennant somewhat sweepingly assumes that a "large proportion of the readers" of this pamphlet "were not sufficiently well informed to enable them to verify the accuracy of the statements and assumptions therein made." On the contrary, I cannot help feeling that a very large majority of its readers must have been exceptionally well informed and qualified, and moreover were in a position to institute ample enquiries in the matter. In making this statement it may be as well to explain that I was responsible, through the courtesy and with the kind assistance of the Editor of the "Madras Mail," for the compilation of the pamphlet in question of which only 50 or 60 copies were printed, one copy being sent to each of the following, *viz.*:—

H. E. the Commander-in-Chief and his Military Secretary, the Adjutant-General, Quartermaster-General and Inspector-General of Cavalry in India, all Lieutenant Generals and all Deputy Adjutant-Generals of Commands, and all Officers Commanding Native Cavalry Regiments.

In order to make manifest the "*raison d'être*" of this pamphlet which bore the same title as this paper, I here reproduce its introduction in full. "This pamphlet contains reprints of articles discussing the merits of the Silladar and Regular systems in the Indian Cavalry that have recently appeared in the 'Madras Mail' and the 'Pioneer,' and a scheme proposed by Colonel C. S. Wheler,

6th Prince of Wales' Cavalry, for reducing certain recognised defects in the former system. The articles do not necessarily deal exhaustively with the subject, but they give a general connected idea of what is to be said *for* and *against* the two systems and will thus, it is hoped, prove interesting and instructive to Indian Cavalry Officers both in Northern and Southern India."

The author of this "Plea" claims to have exceptional opportunities for comparing the two systems, as he is quartered in the same garrison with one of the Non-Silladar Regiments, and in case it may be thought I presume too much in replying to him, I must explain that this question of the organisation of our Indian Cavalry has been a hobby of mine for many years, and in order to justify my present attitude, I must state that I have had exceptional opportunities also of comparing the two systems. On two occasions for considerable periods during staff employ, I have been quartered in a station where both systems were in vogue. Moreover, I was present with my Regiment the 27th Light Cavalry when it was reconstituted in 1903, and have had the advantage of serving for two years as a Squadron Commander under two Silladar Commanding Officers. My Squadron on reconstitution received all its Native Officers and 65 transfers from Silladar Cavalry and three-fourths of the Native Officers of the Regiment, including the Risaldar-Major, came from the Silladars. In 1903 I went up north recruiting, and stayed with two Silladar Regiments, whose officers were most hospitable and kind in giving me every opportunity of picking up hints. It must be remembered that at that time every one thought the three Non-Silladar Regiments were to be made Silladars, so that I did my best to gain touch with the system. For the past year I have been Brigade-Major to a Cavalry Brigade, in which there is a Silladar and a Non-Silladar Regiment and which is commanded by an old Silladar Officer. Again, in 1903, I travelled out to India with a well-known Silladar Officer, who was then commanding his Regiment and is now commanding a Brigade, with whom I had many interesting conversations during the fortnight we were thrown together. I hope the above statement may not appear irrelevant or egotistical, but my object has been to impress on my readers, that I am not totally unqualified to reply to "A Plea for the Silladar." Every one will agree with Captain Tennant when he says that "a little knowledge is a dangerous thing, but a little knowledge coupled with biased opinions is more dangerous still." This modest insinuation as regards the contents of the pamphlet criticised is obvious, but in justice to the writer of the articles in the "Madras Mail," I must run the risk of being termed verbose by quoting from two of them as follows: "Under the circumstances set forth above, it will be seen that there are good points and bad points in both the Silladar and Regular systems. Possibly the cost of the former, at the present time, is under-estimated, and certain economies might be introduced into the latter, so that the good points in each might be taken as the basis of a new system

to be made applicable to all." Again, "should Government ever contemplate the reorganisation of the Indian Cavalry, it would surely be better to weigh the *pros* and *cons* of both the Regular and Silladar systems taking the best from both, rather than to be entirely guided by the opinions of one side."

The above extracts clearly demonstrate the fact that the writer of the articles published in the "Madras Mail" cannot be considered to hold entirely biased opinions, however little knowledge he may possess.

"A Plea for the Silladar" appeared in print about 17 months after the question was first raised in the "Madras Mail," so that its author has had ample time to go into the subject even to the smallest detail, as evidenced by the mass of clerical and financial matter included in the paper; but I will endeavour to conclusively prove that the calculations regarding the comparative cost of the two systems are based on such faulty data and unsound principles that they are totally unreliable. But before dealing with the financial aspect of the case, I must first refer to a few general points touched upon by Captain Tennant, and for easy reference, I will, as far as possible, deal with his paper, para. by para.

I would draw attention to the difference in periods of time* which elapsed between the appearance in print of the arguments for and against each system. It took those who are in favour of the Silladar system a considerable time to work up their case: whereas the advocates for the Non-Silladar system, or rather, I should say, the advocates for a modification of both systems, are prepared in a very short space of time to defend their policy.

It is argued in the "Plea" that "no two (Silladar) Regiments are worked on identically the same lines." It would be difficult to find a more damning condemnation of any system. Its author also fails to understand why Silladar Regiments are not altogether independent of Government supply during peace. The reasons are as follow:—

1. The Silladar obtains compensation for dearness of grain for his horse. The result is that, as he cannot *always* support himself and his horse on his pay of Rs. 31, he therefore receives compensation over and above his pay, which amount Captain Tennant does not consider in his estimate of the cost of the Silladar, and it is quite probable that this item is not included in the annual budget for the maintenance of a Silladar Regiment.

2. A Silladar Regiment receives considerable assistance from Government in connection with its supply of grass. Either land, free of rent, is set apart for this purpose, or compensation is granted to meet the cost to a Regiment for leasing land. I believe I am correct in saying that the idea is that the Silladar should receive his grass free, and with this intention he is only charged by his Regiment four annas a month to meet the expenses of its preservation, such as thatching, etc., when it is stacked. The 20th Deccan Horse last year

* Captain Tennant's paper was originally received by the U. S. I. in April 1905.—Ed.

received over Rs. 14,000 from Government to meet expenses incurred on account of leasing land from H. H. the Nizam's Government, and for cutting and carting grass from their Rumnahs for the year 1903-04. This is doubtless a recognised charge. Possibly different systems exist in different stations. The 20th Deccan Horse stationed as it is at Bolarun, is a peculiarly good instance of the benefit a Silladar Regiment derives from the system in vogue. The Government grant of Rs. 14,000 referred to above, plus the monthly stoppage of four annas from the Sowar, covers all expenses incurred in connection with the regimental supply of grass. In a good year there is a considerable surplus of grass over and above requirements, and in a large place like Secunderabad, there is an excellent market for this surplus. The result is in many cases that the grass fund becomes affluent. The money is not required for grass, so what is to prevent a Commanding Officer transferring a large balance credit to some other Regimental Fund, possibly to the Profit and Loss Account or Horse Chanda Fund as may be desired. I do not say there is anything unusual in this, but the money is made by the Regiment in a Government transaction. If the local Government Grass Farms were to take over the supply, that department would show a credit instead of the Regiment, and the surplus money would be in its proper place.

Again, I must draw attention to the fact that the "Plea" in comparing the relative cost of the two systems under this heading, debits Government under the Non-Silladar system only, and does not credit the Silladar with any asset over and above his actual pay in connection with the supply of grass. A Silladar Officer will argue that he can supply his Regiment with grass cheaper than the Government Grass Farm can. There is only one reply to this. If a Government Grass Farm dealing in large transactions cannot compete with a Commanding Officer of a Silladar Regiment on this point, then the Government Grass Farm is not run on sound principles. Of course a Government Farm has to maintain a separate establishment, whereas the permanent establishment of a Regimental farm probably consists of soldiers, which cost the Regiment nothing; but even this should not render it impossible for the Government Farm to compete, if run on sound principles.

The "Madras Mail" stated that "Government helps to maintain this transport (*i.e.*, the Silladar's) by making a loan of from 80 to 90 mules to each Regiment." Even after reading Captain Tennant's criticism of this statement, I hardly think the latter can be considered misleading to any one with a sound grasp of the situation. The statement is substantially correct, for Government does actually make a loan to each Silladar Regiment of 89 mules. The Regiment thus saves the initial cost of 89 mules; *i.e.*, a total sum of Rs. 17,800, if we take a mule to be worth Rs. 200 as estimated by Captain Tennant. Does the Regiment pay any interest for this advance of capital? I think not. If Silladar Regiments have cause to grumble at the arrangement, it would be an easy matter to transfer some of

these mules to Non-Silladar Regiments, allowing the former the privilege of providing their own. This is another point where Silladars gain without it apparently being reckoned up in the cost of maintenance of this Regiment, or as an asset to the individual Silladar. After criticising the above quoted statement the "Plea" continues: "But this is a trifle compared with the statement that it would be an easy matter to furnish the transport required for a regular Regiment from existing mule corps. Why the transport maintained by mule corps is insufficient for the carrying out of ordinary station duties in times of peace, as can be shown by the number of bills that are submitted for hired transport. It is notorious that even in small frontier campaigns, the matter of transport animals is a serious difficulty, and what does the writer imagine 'Transport Enumeration Officers' are employed for, if the existing mule corps can provide transport sufficient for all requirements?"

This query may sound quite unanswerable and may hopelessly fog the incompetent readers of military subjects referred to in the "Plea," but I have only to quote the following extract from letter No. 2314-C., dated the 16th October 1905, from the Secretary to the Government of India, Military Department, to the Adjutant-General in India, to prove that the proposal is quite feasible and has already been acted upon by Government. After pointing out certain unsatisfactory arrangements in Non-Silladar Regiments the letter goes on to say, "to remedy the above defects, it is proposed that syces and grass-cutters in these regiments should be at once discharged and the following substituted. Each Regiment is to be allowed 250 mules and 22 carts to be attached from an organised mule corps for grass duty in peace time.

It is added that one of the advantages of the proposed arrangements will be that each Non-Silladar Regiment will be able to support itself and work its own farm." The above proposal has already received the sanction of the Government of India.

It would be as well to draw attention here to the very patent fact, that hired transport for peace conditions in Cantonments is far cheaper than maintaining a permanent establishment. It means that you only hire for actual requirements and that you have no expensive permanent establishment to maintain, which during slack periods, is doing nothing. It surely is wiser to employ transport during peace with units than to keep it separate, and without doubt, Government in having adopted this course will ultimately make a saving during peace both as regards the maintenance of transport in Cantonments and as regards the cost of maintenance of a Non-Silladar Regiment. Not only will a Non-Silladar Regiment be independent of all other Government transport both during peace and war, but should it not be ordered on service on war being declared, its transport will be available for other purposes, temporary and local arrangements being made to replace it. There are some difficulties yet to be overcome as regards the mule corps personnel of these mules, but doubtless the future will show a means of solving them.

Captain Tennant has made a grave error regarding the price of a "Non-Silladar" remount. If all his calculations are based on similar inaccurate data, they are anything but reliable. He estimates the cost of a Non-Silladar remount to Government to be Rs. 800. I absolutely challenge this estimate. Remounts are now bought at the port of debarkation at an average price of Rs. 400 and are despatched direct to units, so that the cost to Government for each is Rs. 400 plus rail fare to destination, roughly Rs. 450. I leave it to the Director General of Army Remounts in India to decide which estimate is correct. Should Captain Tennant's estimate be incorrect, then his calculations and arguments under the heading "Horse Chanda Subscription," when he compares the cost of the two systems later on in his paper, are entirely unreliable, as there is a discrepancy of Rs. 350 in the price of each horse. The Remount Department, I understand, purchase slightly in excess of requirements, so that there is yearly a small balance of Non-Silladar remounts sent to depôts pending next issue to units, but these are usually distributed prior to the next annual casting to replace special casualties during the year. This practice is sound, and does not materially enhance the average cost of the Non-Silladar remount.

It may not be generally known that the price of a charger selected by a Non-Silladar Officer from the ranks of his unit, has been recently reduced from Rs. 1,050 to Rs. 700. It is obvious that Government would not sanction the sale of horses to officers for Rs. 700 which have cost them Rs. 800.

It may be that the Army Remount Department in its annual report strikes an average as regards the cost to Government of all remounts issued to units. But it must be remembered that it buys and issues 11 or 12 different classes of animals, *viz.* :

- I.—Officers' chargers and Viceroy's Body Guard.
- II.—Royal Horse Artillery,—1 Draught, 2 Ride.
- III.—Royal Field Artillery,—1 Draught, 2 Ride.
- IV.—British Cavalry—1 Arabs, 2 Country Breds, 3 Australians.
- V.—Non-Silladar Cavalry,—1 Arabs, 2 Country Breds, 3 Australians.
- VI.—Mounted Infantry.

It is fallacy to strike an average in this manner, and absurd to say that a Non-Silladar remount which never sees a Remount Depôt costs Government as much, for instance, as an Officer's charger. This method of calculation may be excellent for estimating an average cost all round, but totally incorrect as regards the cost of Non-Silladar remounts.

I hardly follow Captain Tennant in the reply he gives to the following self-imposed question, *viz.*: "But in order to become expert judges of what are and what are not likely to make good troop horses, where did the same Remount Officers gain their experience"? He replies by quoting the pamphlet as follows:—"Remount Officers, as an almost invariable rule, are selected from Silladar Regiments because of their special qualifications," also "to

expect every Silladar Regiment to produce an expert in horse buying is to expect the impossible." On referring to the Army List I see there are 15 Officers on the establishment of the Army Remount Department in India, and all, I think, are old Silladar Officers. If Silladar Regiments are denuded of these specially qualified officers they must suffer, and the contention of the "Madras Mail" was that it was impossible for every Regiment to produce an expert. To cavil at the procedure or qualifications of the officers of the Army Remount Department, is to cast a slur on the source whence they were obtained, *i.e.*, Silladar Regiments. It is quite reasonable to assume that the Army Remount Department, composed as it is of Silladar Officers, dealing in large contracts instead of small ones, should be in a position to do Government as cheaply as they could formerly do their own Regiments.

Captain Tennant referring to a remark about the high price that must be paid for experience says "permit me to remind the writer that the money expended on experience in this instance has all come out of the poor Silladar's pocket, and the benefit of it is reaped by the Regular Cavalry." I fear that this is hardly a sound appreciation of the situation. Firstly, the writer did not say that Silladar Officers were selected for their "experience" but for their "qualifications." A very different thing. Officers in the Remount Department enter it, as a rule, young. They are selected for their natural gift of an eye for a horse or for some other such qualification. They have a deal to learn, and their "experience" is gained later and in support of this statement, I can only say, compare the horses of a "Non-Silladar" with those of a "Silladar" Regiment. Every Silladar Officer I know who has seen the former, tells me they are better mounted and that there is no comparison. There, of course, may be exceptionally well mounted Silladar Regiments, but even these can hardly compete with the "Non-Silladars."

As regards the comparison made between the War strength of each system. The "Non-Silladars" go on service with 8 camels and 488 all round sound horses, leaving 24 behind. The Silladars hope to go with 8 camels and 492 sound horses, leaving behind a reserve of 121 immature or over-age horses. I say "*hope*" to go, but I fear some do not even "*hope*" to go with sound horses; they possibly may "*hope*" to take with them a lot of corks for which, after a little work, they "*hope*" to obtain compensation from a magnanimous Government. This is another case where compensation is paid to Silladars and probably charged to the very elastic War Debt, and which never appears in the cost of maintenance. The same argument also applies to outbreaks of infectious diseases amongst Silladar horses. Here again compensation is paid for losses, Government bearing the loss, not the Silladar.

Captain Tennant refers to the subject of the reserve of untrained horses maintained by the Remount Department in time of peace, *viz.*, 1,000 horses, and he asks, where are the remainder to come from? I presume, when required, they will still be imported

as is the case at present with the majority of trained horses now on the establishment of units. Apparently Captain Tennant looks with abhorrence on the idea of importing horses, but nearly all the horses of his Regiment are imported, and I understand every year Silladar Regiments are importing more.

The provision of a reserve is a large question, but possibly it may be thought that a reserve of immature and over-age horses is more costly and disappointing than none at all. I know that it is the opinion of most Cavalry Officers that every Regiment should have a horse per man, and to a very great extent this opinion is sound, but it is costly in peace time. There is some reason for the shortage in horses in a Non-Silladar Regiment, as it always leaves a proportion of trained men at the *dépôt* to take on the training of remounts to replace casualties when a Regiment goes on service. I do not argue this is altogether a good system ; but it is a cheap one which has its points. I also know that nearly every one thinks that each man should have his own horse and ride no other : now in my opinion this has its disadvantages, because to turn out a good rider, a man must learn to ride on more than one horse, in fact the more horses he rides the more confidence he gets and the better rider he will become.

But to return to the question of a large reserve of horses. Firstly, it is very costly and animals do not grow younger nor sounder. This to my mind is the disadvantage of a large reserve and the advantage of the Army Remount Department. There is usually some notice or foreshadowing of war being declared. It is then that the work of the Remount Department really commences. At once telegraphic orders should be sent to foreign markets for the necessary supply. All local markets could be tapped, and the question of training taken in hand, horses being sent to all *dépôts*. This is where the Silladars would break down. They would not be in a position to compete with Government in the open market in times of stress, as would exist on war being declared ; and as every Silladar Officer including the author of the "Plea" acknowledges, a large majority of the 121 reserve horses at present in a Silladar Regiment would be unfit to replace casualties. It is useless to mince matters and shut one's eyes. It is only because Government have winked at this comedy of a Silladar reserve of horses, that Regiments have been able to keep their Chanda Funds going. Personally, I think it would be sounder policy to maintain a percentage of dismounted men in Silladar Regiments, than keep up a reserve which is recognised to be a farce.

When my Regiment was last inspected by General Haig, at his horse inspection, he asked me how many horses I had on parade. I replied 112 (my establishment being 128). The absentees included horses sick, on duty and wanting to complete establishment. I was afterwards told that he was surprised at how many horses we could show, as with a Silladar Regiment he could never get a squadron to turn out more than 80 or 90, out of an establishment of

bout 154. It is also a very noticeable fact that when you see a Regiment of each system parading together, the "Non-Silladar" invariably turns out stronger. At least this is my experience since I have held my present appointment. I may go further and say that my Brigadier who is a Silladar Officer will corroborate this statement.

The writer of the "Plea" tells us that it is not his intention nor his desire to criticise every statement and insinuation made by the author of the pamphlet, but he forgets that the pamphlet he refers to contains articles by at least three authors, if not more. Possibly he may have allowed prejudice to gain the upper hand. It may be thought that the articles advocating the Silladar system were worthy of some consideration or remark.

In explanation of the statement that "the present annual cost of a regular (*i.e.*, Non-Silladar) Regiment does not exceed that of a Silladar Regiment by much more than Rs. 10,000," I have authority for saying that the statement was made by a Silladar Officer of some considerable experience. If the statement is incorrect, it is unfortunate. But can the statement in the "Plea" "that the cost exceeds it by more than 15 times that amount," *i.e.*, by more than Rs. 1,50,000 be accepted as correct? It is to be hoped that a mistake has not been made and another cypher inadvertently omitted. As explained above, the figure is open to doubt owing to the miscalculation of the price of the Non-Silladar remount. Times change, new orders are issued and new methods adopted, *even in Government Departments*. As the "Plea" did not see the light until October 1905, it would possibly have been better if the figures on this point had been taken from the Report of the Remount Department for 1904-05, rather than from that of 1903-04. However, it is possible that at the time of writing the former was not available, but had this been done the figures might have been more accurate. In other respects also I hope to be able to prove that they are in many ways equally misleading if not equally incorrect: but I shall leave them alone as far as possible, trusting to the expert to deal with the case. I am convinced that neither Captain Tennant nor I can teach the Finance Department anything, and that it is quite capable of working out the relative cost of each system without our assistance. I shall therefore confine myself to the broader principles of the question, which are frequently lost sight of when a mind is absorbed in calculating the infinitesimal fractions into which a rupee can be divided.

I now come to the advantages claimed by Captain Tennant for the Silladar system. I number them consecutively in the order in which we find them.

I.—Perfect mobility and permanent readiness for active service at a moment's notice.

With the recent order by the Government of India on the subject of detaching 250 mules and 22 carts from an organised Mule Corps to a Non-Silladar Regiment, its mobility has been placed on

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exactly the same footing as that of a Silladar Regiment, and possibly it will be more mobile, for just as is the case regarding its horses, its transport mules will probably be of a better stamp.

As regards permanent readiness for active service, any regiment that is "Mobilised," is ready to proceed on active service at a moment's notice.

II.—Freedom from all red tape paralysis and dependence on Government Departments.

It is obvious that the writer did not know what was in the minds of the authorities at Army Headquarters when he was writing these words. In explanation, I quote the following from letter No. 2470-D., dated Simla, the 5th June 1905, from the Secretary to the Government of India, Military Department, to the Adjutant-General in India.

"I am directed to say that the Government of India have recently had under consideration the question of the supply to Silladar Cavalry in the field, of horses, baggage animals, clothing, and all articles of equipment and necessities now supplied under Regimental arrangements.

"2. It is recognised that the present system under which the requirements of Corps in the field are made good from Regimental depôts in India, would be unworkable in a prolonged campaign, even if it were possible for depôts of Silladar Regiments to collect stocks of likely requirements, the delay that would ensue in sending indents from regiments to depôts, the waste of transport in carrying supplies about the area of operations and the uncertainty of consignments reaching their destination at the time and place required, render this method impracticable. The Government of India have therefore decided to supply Regiments in the field with replacements of animals and renewal of articles of equipment of every kind, requisite to maintain their efficiency, while in return, certain deductions, representing the amounts which would ordinarily be paid to Regimental Funds, for the upkeep of animals and equipment, will be made from the pay of the native ranks and credited to Government."

Here follow rules which have been drawn up to carry the above arrangement into effect, which it is unnecessary for me to go into.

What will the Silladar say to such an innovation? What about "red tape paralysis and dependence on Government Departments," and what about the deductions from the men's pay being credited to Government? The arrangement is absolutely fair, as Government will replace casualties and losses amongst horses and equipment. But this innovation is a terrible one from a Silladar point of view. What Silladar Regiment proceeding on service does not hope to recoup its finances and return with its funds overflowing? Did they not formerly get cash compensation for losses of every description? And did not all deductions from men's pay go into Regimental Funds? Possibly this aspect of the case has before been lost sight of, for since the last Afghan War, when the system I

understand entirely broke down, there has been no prolonged campaign to seriously test it. What compensation did Silladar Regiments, who served in the Burma War and in China, receive from Government, and was this compensation ever considered in connection with their general maintenance? Also what was the state of their Regimental Funds on return after the war as compared with what it was on departure before the war? A reply to this question would be rather interesting.

III.—A reserve of over 4,000 horses, trained or under training, always maintained, is the third advantage of the Silladar system claimed for it in the "Plea." I have possibly already said enough concerning this reserve, but I have one suggestion to make and that is with reference to the *depôt* of a Silladar Regiment on service. From the rules which I omitted from the Military Department letter quoted above, I see it is only contemplated to place on the Non-Silladar system the actual establishment proceeding on Field Service, and to leave the establishment still at the *depôt*, Silladars. I think Government would do well to make a clean sweep of it and turn all into Non-Silladars during the war. The cripples of the so much boasted of reserve of horses might be possibly utilised as baggage animals, and the Remount Department might step in and issue sound horses for the men at the *depôt* to train, retaining if necessary any serviceable horses that by chance might be on the strength of the *depôt*. A Silladar Regiment thus proceeding on service might, at the termination of a prolonged campaign during which there may have been considerable wastage of horseflesh and deterioration of Regimental property, be reclaimed at the expense of the War Fund and return "Non-Silladars" without showing any excessive military expenditure during peace. It would be a cheap way out of the difficulty. But Silladar Regiments will find themselves somewhat handicapped when proceeding on active service. They will not be in touch with departments, nor will departments be in touch with them. However, during war, soldiers of all kinds quickly shake down to routine, so that the difficulties will soon pass off. But a word regarding Captain Tennant's figures which are as usual misleading.

Possibly, some of the 121 horses on the strength of the *depôt* of a Silladar Regiment on Service may be considered serviceable. Some would be remounts unfit for work and some old horses for training recruits. To be liberal let us allow 50 per cent to be serviceable, *i.e.*, 60 horses.

There are 38 Regiments of Indian Cavalry and the Guides, (the 24th Cavalry does not exist). Three Regiments are Non-Silladars, making a total of 35 Silladar Regiments and the Guides.

$$35 \times 60 = 2,100.$$

Add 50 for the Guides Cavalry which has three squadrons, the total will be 2,150. This is a sanguine estimate of the reserve, and I am inclined to think too sanguine. It will be noted that Captain Tennant estimates this reserve to be over 4,000 horses. But to

obtain this figure he assumes that the full numbers, *viz.*, 121 horses are fit for service, which everyone must know to be an impossibility. Even in Non-Silladar Regiments a margin of 24 horses is allowed, and these would probably be unfit for service.

IV.—Absolute independence in the matter of transport, tentage, saddlery, clothing, &c. Of course this advantage is also no longer existent, for the same reasons as explained above, in advantages I and II. It is hard on Captain Tennant that such recent orders of Government should have robbed him of three out of four of the advantages claimed by him for the Silladar system, and I shall not be at all surprised if sooner or later his last ewe lamb, *viz.*, the 4,000 horses in reserve is not taken also: that is to say, if the system itself holds out much longer.

We now come to the advantages claimed for the Non-Silladars by Captain Tennant. They are summed up in one short paragraph which is so unique that I must reproduce it.

“And what can be said in favour of the Non-Silladar system? Merely that they (*sic*) are more ‘uniform,’ that is to say, that all initiative in thinking out new methods of carrying equipment, devising new patterns of transport, saddlery, tents, &c., &c., is smothered: everything must be done according to a sealed pattern and red tape.”

This summing up is sufficient to condemn the soundness of the author's entire judgment. Could any statement more perfectly represent the bias of a warped mind? Is Government served by such an incompetent and narrow-minded staff, that it will not adopt, if necessary, new methods of carrying equipment and devise new patterns of transport saddlery?

The author in his desire to “damn” the Non-Silladar system, casts an undeserved slur on the entire organisation of our British Cavalry and Artillery, Supply, Transport and Ordnance Departments. Let the Silladars produce their wonderful methods and patterns. If they are good they will be adopted, if not they will be left alone. I am here reminded of Lt.-Col. Kenna's remark on the Government universal pattern saddle in his report on Mounted Infantry in Africa and Somaliland. He acknowledges the general serviceability and strength of this saddle, as compared with any others he saw. He refers to its extra weight, but remarks that efficiency in many respects is liable to be sacrificed for lightness. I cannot quote from memory Lt.-Col. Kenna's exact words, but they are to the above effect. Again, I can call to mind the name of an officer well known in Southern India, and possibly all over India, *viz.*, Lt.-Col. R. G. Jones, now Military Secretary to H. H. the Maharajah of Mysore. This officer has a reputation for ingenious inventions regarding Military equipment. He was for the first twelve or fifteen years of his service in a Non-Silladar Regiment, during which period he was its Adjutant, and I think his name was borne on the rolls of his Regiment for many years longer. He never belonged to Silladar Cavalry, but was for some considerable period Inspecting Officer of the Mysore Imperial

Service Lancers, which Corps, I understand, is more regular than any other Silladar unit, more particularly as regards its supply of horses and equipment and the system of its Regimental Lines, the men being accommodated in barracks. Evidently Colonel Jones' training in a Non-Silladar Regiment did not tend to cloud his inventive brain, and I am in a position to state that the 20th Deccan Horse has adopted one, if not two, of Colonel Jones' inventions. The fact of the invention of an officer trained for so long as a Non-Silladar being adopted in a Silladar Regiment is interesting and worthy of note.

I will pass over all that is said regarding what the Silladar system is. I find that the description of it as published in the "Madras Mail," only contained one mistake, and that was with reference to arms, which it was stated were supplied by Government. It is only the rifle or carbine which Government supplies. I refer to this with a view to drawing attention to the fact that the statements contained in the "Madras Mail" were very fairly accurate.

In reviewing the Silladar system, and having ably brought to light some of its defects, the "Plea" continues, "but whatever course be pursued, it means that a certain amount of the energy of the Regiment is lost to the public service, but this is not the fault of the Silladar system but the fault of the Government in demanding the impossible."

I am grateful for the expression "loss of energy" which so aptly describes what results from the defects of the Silladar system. The time and energy of the Silladar Officer is so taken up in making both ends meet, that the State suffers. The energy expended on horse dealing, stud farming, grass farming, inventing new methods of carrying equipment, devising new patterns of transport saddlery or in managing Regimental workshops on a large scale (in some Regiments they make all their own leather equipment) must absorb much of the energy that should be expended on soldiering proper. I know some Regiments carry on a regular horse dealing business, much to their pecuniary advantage, quite oblivious of the fact that they are breaking their contract with Government. All the horses they buy cannot be good ones and a considerable number are disappointing. Many of the good ones are sold at a profit and the bad ones left to carry on the work of Government. Prior to the Delhi Durbar one Regiment made quite a haul for its Chanda Fund by selling driving pairs as well as chargers, but found difficulty in adequately mounting one squadron without selecting horses from the others, when it was ordered to send one squadron to the Durbar. I was not in India at the time; this statement is therefore not made from personal knowledge, but from hearsay. In another Regiment, about 50 men are employed for from six to nine months during the year as grass chowkidars on its various runnahs. The loss of energy to the State on this point alone is appalling and in a varying degree this loss of energy occurs in all branches of the interior economy of a Silladar Regiment.

The contention is sound that such work should be left to Departments, and I can understand no "plea" strong enough to upset this theory, which is accepted in every other civilised army in the world. I do not for a moment insinuate that there are not two sides to every question, but the object of this paper is not to champion the Silladar cause, but to reply to the "Plea for the Silladar."

I know that the majority of Silladar Officers hold that the Silladar system is popular with the natives of India. But it is a very moot point for the following reasons:—The Silladar as a rule knows nothing of the "Non-Silladar" system. Captain Tennant says: "I am aware that recently a number of Silladars have been transferred to the Non-Silladar Regiments (upon reconstitution), and therefore it will be said that my contention falls to the ground, but wait until these former Silladars have had time to compare the advantages of the two systems." My Regiment, the 27th Light Cavalry, was reconstituted just over three years ago. It has recently passed through Secunderabad (my present station). A native officer came to see me. I asked him what he thought of our system which I knew he did not like on first joining the Regiment. He replied he did not like it at first, but now that he had seen it working, he liked it with the exception of there being no Regimental Transport as in a Silladar Regiment. I laughed and said to him, Don't say what you think will please me, what is your real opinion? Would you like to go back to the Silladar system? He said he would not. This native officer I know well. I always found him a man who had an opinion of his own and did not fear to express it. I explained to him that now we had been placed on the same footing as Silladars regarding Regimental Transport. He also told me he had many names of men down for his squadron, for whom there were no vacancies. The above statements can be verified by the authorities sending their recruiting officers into the villages, where the Non-Silladar system is known, to enquire what feelings exist on the subject. Again, this native officer told me that we could get better men physically of the same class as a Silladar Regiment, because they could enlist without paying for an assami. How does the above compare with what the "Plea" has to say on the subject? I will quote it. "Suitable recruits are becoming scarcer and scarcer every year, and those that come will not put down large sums of money in cash as heretofore, thereby beggaring the Regimental funds: so much is this the case that in a certain Regiment no less than half a lakh of rupees of Regimental money are out on loan to the men, thus hardly leaving sufficient to form a working balance." I note that banking is another of the multifarious duties of a Silladar Officer. In a regular Regiment if an officer were found lending money to his men, he would most probably be removed, but this banking business is allowed in a Silladar Regiment.

The author goes on to say "The mischief is that desirable men who no longer see the advantage of enlisting in the Silladar Cavalry,

will not do so in the Infantry or in the Non-Silladar Regiments, and hence their services are lost to the State (as soldiers) for ever." This is rather a sweeping assumption, and I hardly think there is sufficient cause for it. On the contrary, so far as can be seen at present, judging from actual facts, there appears to be no prejudice against the Non-Silladar system as evidenced by the case with which the 26th, 27th and 28th Light Cavalry Regiments were brought up to strength.

It is, I know, always claimed that the fact of a man owning his horse and providing everything for himself is a great attraction, but there is a very great fallacy in this. It used to be the case in old times, but nowadays, the man has nothing to say as regards the provision of his horse and equipment. It is all done for him by the Regiment and he has to practically take what is given him. Then, again, I understand that in some Silladar Regiments the men are not allowed to take away their horses with them on furlough which used always to be allowed in former days. This would naturally be quite impracticable now in some cases when men serve so far away from their homes. For instance, do the 30th Lancers, "Gordon's Horse," now at Bangalore, allow their Sikhs and Jats to take their horses on furlough? And if they do, would they take them? They could not march owing to the distance, and the expense of railing would be prohibitive. Captain Tennant is again at fault when he says "What will his relatives think of his new position (the Non-Silladar) when he goes on furlough and is unable to take his sword with him." Non-Silladars may take their swords with them on furlough and do. Such little inaccuracies somewhat tend to shake one's faith in the statements contained in the "Plea." All that can be said concerning the legal aspect of a Silladar's contract with Government may sound very convincing, but this has little to do with the relative merits of the two systems, beyond the fact that the present contract is utterly unsatisfactory for the Silladar, and it remains to be seen whether Government can afford to give him more favourable terms.

I now come to the financial aspect and the comparison in cost of the two systems. To the uninitiated, Captain Tennant's figure may appear very convincing and unanswerable, but, without going into too much detail, I hope to make it clear that these figures are based on unreliable data in some instances and unsound calculations in others.

The various items are enumerated under 17 different headings which are dealt with separately.

(1) *Horse Chanda Subscription*.—I think I have already demonstrated above how absolutely unreliable Captain Tennant's estimate is, but it may be as well to point out that his "simple calculation," i.e., Rs. 6-10-8 if multiplied by the number of the native ranks in a regiment, i.e., 625, and again multiplied by the number of months in the year, i.e., 12, amounts to the considerable total of Rs. 50,036 which is apparently the total amount per annum

Government is credited with spending on the remounts of a Non-Silladar Regiment. It would possibly be more sound and more accurate to make this calculation from a different standpoint. A fair estimate of the number of remounts received yearly in a Non-Silladar Regiment would be 50. The price of each is, say, Rs. 450, thus—

Rs. $450 \times 50 =$ Rs. 22,500.

There is a great difference between these two estimates, but I have the utmost confidence in leaving the merits of the two methods of calculation to the decision of the Finance and Army Remount Departments.

(2) *Feed of Horses*.—This item is fairly accurate. I believe as regards actual cost of feed, but without doubt, Government feed their horses better than the Silladars do, and there is reason for this. Non-Silladar Regiments having a percentage of fully trained men more than horses, the latter are in more constant use. Also horses are not nursed and saved as they are in Silladar Regiments. If a horse is worked hard he requires good feeding. I have already referred above to the fact that Non-Silladar Regiments invariably turn out stronger on mounted parades than Silladars, although the establishment of horses is 512 and 613 respectively. This alone shows that they must be worked harder. It must not be forgotten that the saving effected by Government on the maintenance of dismounted men more than covers the extra cost of feed of the remainder, so that Captain Tennant's figures are not reliable. It gives quite a false estimate of the total cost of a Non-Silladar Regiment if this is based on the calculation of a mounted man complete, when there are 101 dismounted men.

I must deal collectively with the following headings:—

(3) *Sycc* (including compensation).

(4) *Sycc Jemadur* (share of).

(13) *Free Transport*.

(14) *Mule Chanda Subscription*.

(15) *Feed and Maintenance of Mule*.

All the above, even if the figures in the "Plea" may be accepted as accurate, are affected by the recent orders issued for the reorganisation of Non-Silladar Regiments, so that it would be useless to touch upon them beyond saying that the entire calculations must now be incorrect as they are based on obsolete data.

(5) *Forge Fund*.—The arguments and calculations set forth under this heading are decidedly ingenious, but are possibly open to much criticism by experts. It is somewhat difficult to make such an estimate, when there is no such thing as a Forge Fund in a Non-Silladar Regiment, and I am inclined to think that it is not a fair or sound comparison.

(6) *Tentage*.—It will be seen that the Non-Silladar is cheaper by half an anna per mensem under this heading.

(7) *Saddle Fund*.—There is no doubt that the Government universal pattern saddle will stand more wear and tear on service

than many of those in use in Silladar Regiments, but it is decidedly possible for Government to be done cheaper in this respect. This remark refers more to the maintenance and upkeep than to initial cost. Without doubt condemnations of Government saddlery are carried out on a far more liberal scale than is the custom in Silladar Regiments. The reason of this is, that Inspecting Officers possibly have too keen an eye for general smartness and Commanding Officers are inclined to sacrifice articles of equipment before they become actually unserviceable, whereas Silladar Officers, quite rightly in order to save the men's pockets, retain all articles of equipment until they are no longer of any use. I am inclined to think that there is a way out of this difficulty, which would tend to get the full wear out of equipment without sacrificing smartness, and there is no doubt a saving could be effected, but it is beyond the scope of this paper for me to give details of my proposals.

(8) *Upkeep of Line Gear*.—If this statement be correct Government is extravagant and a considerable reduction in monthly expenditure is possible. I happen to know that in Non-Silladar Regiments the allowances are fairly liberal, but the Line Gear Fund is the one and only Fund a Non-Silladar Squadron Commander has at his own personal disposal, to assist him in the general stable management of his squadron, and I am inclined to think that Government would do well to allow this one extravagance to remain. The allowances more than cover actual cost of repairs to Line Gear. The surplus balance however is not large but it places the Squadron Commander, if he nurses his fund well, in a position to consider the general health and comfort of his horses and to maintain a good system of management. Chaff-cutting and grain-crushing machines are not allowed by Government nor stabling for horses. It is from this fund that these machines are provided and temporary shelters against sun and rain for delicate horses are erected, and assistance is afforded in changing the diet of certain horses which require special consideration, and for which the Government ration may be unsuitable.

(9) *Clothing*.—The sum of Rs. 16, spent by Government on the clothing of the Non-Silladar, does not cover actual expenses, so that the sowar does not get the full benefit of his pay, consequently it may be said that Government have not a bad bargain under this heading.

(10) *Upkeep of Lines*.—The Non-Silladar is again cheaper by half an anna per mensem and the Silladar system of private Regimental Lines is eminently unsatisfactory, as evidenced by the difficulties of the various Line Committees under the different systems that exist. This question has been so fully dealt with in the "Pamphlet" referred to that I need say no more on the subject.

(11) *Pay of Sowar*.—No remark.

(12) *Interest and Capital sunk*.—It is extremely doubtful whether this item should appear at all in the calculation, more especially as no credit is considered from the Silladar point of view

under this heading, for the many large sums yearly spent by Government on that system, which I have brought to notice above as being lost sight of. The author naturally wants to make the best of his case, but it is a question whether a competent financier would allow a monthly sum of Rs. 3-4-0 to be taken as the cost to Government of each Non-Silladar sowar on account of interest and capital sunk. The difficulty of dealing with this matter is acknowledged by him and it is quite possible that the difficulty has been too great. I must again draw attention to the calculations under this heading, *viz.*, the price of the remount (Rs. 800) which of itself is sufficient to show that the amount of the estimate must be inaccurate even if the method be accepted. The other items are equally open to criticism.

(16) *Veterinary Establishment.*—A good deal appears under this heading and possibly there may be good reason for some of the remarks made, but a reference to the "Pamphlet" will show that this was a point which required amendment from the Non-Silladar point of view, and to my knowledge a very detailed statement on the subject has been submitted to higher authorities, with a view to placing this matter on a more satisfactory footing.

I entirely disagree with the author's estimate in this case. The Veterinary Department is not maintained for peace conditions alone, and there could not possibly be a Veterinary Officer available per unit either in peace or war. Besides, Silladars can at any time call in the services of a Veterinary Officer when required, in fact for months, the horses of the 20th Deccan Horse were entirely under the supervision of the Veterinary Department during their recent outbreak of Lymphangitis epizootica, and Silladars would receive equal attention on service with the Regulars. I also understand that since the arrival of the 28th Light Cavalry at Saugor no Veterinary Officer has been stationed at that place. It would be far better to place Non-Silladars on the same footing as the Silladars in relation to the Army Veterinary Department which is maintained for the general benefit of the service. But doubtless the authorities have this question under their consideration, and it is to be hoped that Non-Silladars will be brought into line with Silladars, when there will be no necessity to consider this as a special cost against them.

The "Plea" continues: "That our casualties are actually less per annum than in Non-Silladar Regiments, can only be attributed to the fact that more individual care is bestowed upon the animals by both officers and men, for which by the way, not the slightest credit is given to them."

As regards Non-Silladar Regiments, this is an absolute libel, and in addition it is a gross insult to the Army Veterinary Department. I have already shown how Non-Silladar horses are worked harder than Silladar horses. If casualties and castings are higher in Non-Silladar Regiments, I attribute it chiefly to this. In Silladar Regiments they have an enormous number of men on Regimental employ, *i.e.*, grass and stud farms, Regimental workshops, &c., &c. They are allowed to maintain a considerable percentage of

under-age horses, unfit to work, also they may retain over-age horses longer than is the custom in Non-Silladar Regiments.

All these points tend to reduce casualties. What is said regarding the system of treating sick horses in Non-Silladar Regiments is quite true and subalterns are not encouraged to gain Veterinary knowledge as of old, but this has already been brought to the notice of superior authority.

(17) *Share of eight packalies.*—No remark.

The author sums up as follows :—

“In working out a calculation similar to the above, it is extremely difficult to prevent errors from creeping in, and I trust, should any have done so, that it will not be thought that they were intentionally made, with a view to strengthening the case. There is no necessity for such questionable assistance, and any juggling with figures will only damage the Silladar cause.” While giving full credit to the author for the honesty of his purpose, I think he will allow that a good many serious errors have been allowed to creep in, which might have been avoided with more care.

I have fully explained above where remounts are to come from in time of war, and also what is the reason for having had up to date a percentage of dismounted men in Non-Silladar Regiments, the reason for which has hitherto not been understood by Captain Tennant. I hope I have made this clear. I do not defend the system, but its reason is apparent and it is obviously cheap.

All that is said regarding stocks and shares and dividends is rather beside the point, but it tends to show the trend of a Silladar mind when it has to grapple so much with matters of finance. The mind of a Regimental Officer should not be occupied with such weighty matters. The comparison made of the position of the P. and O. Company relative to that of the Silladar, must come as a surprise, if it is to be accepted, that these opinions are generally held by Silladar Officers in His Majesty's Indian Army.

I recently received a letter from a Silladar Officer to whom I had sent the “Pamphlet” on our Indian Cavalry in which he says: “As regards the class of recruit, provided the pay is good enough, I don't see why Regular Regiments should not get as good recruits as the ordinary Silladar Regiment, especially amongst Sikhs. I know the men in the Burma Police Mounted Infantry are the same class as enlist in Silladar Regiments, but the pay is good.” The great drawback to the Silladar system is that it requires a Commanding Officer to have a business head to run it, and if the Commanding Officer is not so gifted, he will soon bankrupt it. Further there should be safeguards against his indulging his whims and fads in the matter of uniform, &c., at the expense of the men and Regimental Funds.

The above from a Silladar Officer is significant.

Before concluding this paper, I will, as far as lies in my power, review a few general points bearing on the question now that it appears to have been seriously taken up.

I do not think it is the Native ranks who dislike the Non-Silladar system, any change would not materially affect them so long as they receive sufficient pay. It is the British Officer who has strong feelings on the subject. The one great weakness of the Silladar system is not the bad points it has, but the abuse to which many of its good points may be subjected, and there seems no way out of the difficulty. When rules and regulations are non-existent and everyone has a free hand, temperament and human nature have full play. Fads and fancies can be indulged in without let or hindrance. "Energy" is wasted in finance, horse-coping, horse-breeding, farming and workshops.

There is little or no supervision of the accounts of a Silladar Regiment. Surprise visits do take place I believe in connection with the inspection of these accounts, but practically they are all private, and what is to prevent Commanding Officers faking them? If one fund is low and another affluent, it is simple to transfer from one to the other to balance matters. It is their own money and why should not they do it? It is a question of finance and what business man would not do the same? But is this system of handling large sums of money sound, and do not different natures look at things in entirely different ways? I have even heard of a case where the surplus of Regimental Funds has been invested in house property. Possibly an excellent speculation—I believe speculation is illegal,—but if carried on, mistakes may occur, and there is no doubt that mistakes do occur in some cases. Why should there be so marked a difference in the finances of different Regiments? Simply because there is no guiding hand or proper supervision. What Inspecting Officer without experience could possibly satisfactorily audit the accounts of a Silladar Regiment? Even if an old Silladar Officer were the Inspecting Officer he might be equally fogged, when, as the "Plea" tells us, no two Regiments are run on the same lines. Again human nature comes in. A man brought up in the system may not prove the most disinterested Inspecting Officer. There can be nothing of this sort in the Non-Silladar system.

I have heard it seriously stated by a Silladar Officer, that the only Silladar Regiments properly financed are the late Hyderabad Contingent Regiments and the two Regiments of Central India Horse.

I have also heard it stated that the 11th and 19th Lancers and the 33rd "Queens Own" Light Cavalry are the best financed Regiments in India. I am not in a position to verify these statements but I know sufficient to say that up to quite recently, all Hyderabad Contingent Regiments including Infantry, made large sums on practically speculating in exchange. The Halli Sicca Rupee of old used to vary considerably in value, and it was possible to make a considerable monthly income in this way. It should be noted also that Hyderabad and Central India Horse Regiments have hitherto been practically local Corps, and in the case of the former, specially favoured with highly satisfactory local advantages. My reason for drawing

attention to this is that Captain Tennant's experience has been local and under favourable conditions. Consequently his views are affected by his experience. When Hyderabad Silladar Regiments move out of their special area, will they be able to maintain their funds in an equally prosperous condition? This is a matter which can only be proved by experience, and it is quite possible that opinions may change when this confined area has been enlarged. If one looks back to the time when the old irregular Regiments of Indian Cavalry were raised, it is impossible to fail to realise how enormously conditions have changed. Do Silladar Regiments of the present day suit present conditions? In the old days a war broke out, an irregular Regiment of Cavalry was required. It was promptly raised, most probably with a view to acting in a certain terrain for local troubles. It was surely never at that time anticipated that these Regiments would have possibly to serve beyond the seas. No system could have met the conditions of those times better. Possibly at the end of the war the Regiment was disbanded. But a standing army of the present day maintained for general service requires something more.

One hears a deal regarding the insufficient emoluments of a Silladar Sowar. Yet what Silladar Officer will say the system is out of date? Why is this? Can the reply be that the Silladar Sowar is being sacrificed for the prejudices of their British officers? Is it that they would prefer to keep power in their own hands in order that they may exercise their fads and fancies?

I wonder how far true is the "rumour" which Captain Tennant tells us "has travelled the length and breadth of India, that Government seriously contemplated buying up all Silladar horses and taking over the Chanda Funds, and actually would have done so had not the estimated cost been too heavy." Taking for granted that the Silladar system is cheaper, the question arises, Do Government always get sufficient value for the money they expend? If not, is it worth while maintaining a system during peace, which it is acknowledged cannot be continued during war? The initial cost of buying out the Silladar may be prohibitive, should the *immediate* abolition of the system be contemplated. There are other ways of dealing with the question. It could be taken in hand gradually. One or two regiments could be bought out at a time. It would then very soon become apparent, whether a change is desirable or not. Another method would be to allow the system to die out gradually in one or more regiments by enlisting no more Silladars, but as casualties and vacancies occur, replacing them with Non-Silladars. This would possibly not be so satisfactory a method, as there would be two systems working simultaneously in a regiment, antagonistic one to the other. It is quite possible that those in the minority would not have a fair chance. If Government do seriously contemplate such a change, the expense may not prove so prohibitive, if the Silladars' contract be scrutinised. It may be asked to what extent has Government any interest in or claim on the funds of

a Silladar Regiment should they buy out the Silladar? By this is meant the supposition that it has been decided to buy out the Silladar which would necessitate the refund of the full price of each Silladar's assani. The price of an assani varies. Take it to be worth either Rs. 300 or Rs. 500. A Regiment to be bought would consequently either cost Government Rs. 1,87,500 or Rs. 3,12,500. To help towards the payment of this expenditure, what claim would Government have on the funds of the Regiment as they stand? Would it not be fair to expect that if Government were to take over the liabilities, they should have an equal right to the assets of the Regiment? From a Silladar point of view such a suggestion may be considered a heresy, yet surely this is a question that may well be asked. It is probable that a Regiment with good funds would look upon it from a different point of view to one with poor funds. The legal aspect of the case is interesting. But should the suggestion be allowed as reasonable, it will be seen that it would be cheaper for Government to buy out the Silladars of a Regiment whose funds are affluent, and it is only to be expected that these Regiments would be the most averse to any change.

If it can once be ascertained what would be the cost to Government of placing the Silladar system on a really satisfactory footing and what economies and improvements can be made in the Non-Silladar system, it should be an easy matter to work out a sound solution of the problem. If the cost of maintenance can once be settled, there only remains the question of dealing with the initial cost of any change which need not be carried out in any hurry. It could be spread over a period of some years.

Every year enormous grants are sanctioned for irrigation schemes, doubtless a good policy, yet such policy reduces the field for recruiting. Would it not be advisable to consider this question of recruiting, and would it not be a wise policy if some of the surplus funds of Government were spent on improving the organisation of our Regiments of Indian Cavalry.

It will be remembered that only recently the Japanese Cavalry, weak and ill mounted though they were, did yeoman's service in Manchuria against the Russian irregular cavalry, far superior in numbers. There can be no doubt that Cavalry will have its work cut out in any future campaign.

Only a few days ago, an Officer at present in command of a Silladar Regiment was shown for the first time the horses of the 26th Light Cavalry. On asking him his opinion concerning them, I was not surprised to find that both as regards their stamp and turn out, his eyes had been opened, and he said that when the regiment goes up north and is brigaded with a Silladar Regiment it will be an "eye opener" to all Silladar Officers. The only fault this Officer had to find was that some of the horses were too big. It was explained to him that these big horses were the remainder of a batch bought during the South African War. It will be remembered that the three Madras Cavalry Regiments sent a

considerable number of horses to South Africa which were replaced by British Cavalry remounts. In the case of the 27th Light Cavalry most of these have been drafted to the Carabiniers at Bangalore, so that in a few years the three Non-Silladar Regiments will be even more suitably mounted than they are at present.

In conclusion, the basis and manner of Captain Tennant's calculations may not have been radically bad, but as shown above they are open to much criticism, and *his* comparative estimate of the relative cost of the two systems cannot possibly be accepted as accurate.

What must be considered if any changes are to be made is as follows :—

1. What economies can be effected in the Non-Silladar system ?

2. What will it cost Government to place the Silladar system on a satisfactory footing, to the mutual benefit of themselves and the Silladar ?

3. Having considered the above, could the good and bad points of each system be gone into, and would it be possible to evolve a system combining the good points of each.

4. What would this system cost and would it be worth while introducing ?

It has been a wise move to first start with the reorganisation of the Non-Silladar Regiments, as there are only three of them. During the past year many changes have been thought of, and made, and as far as can be seen at present, their cost has been reduced.

As I have remarked before, there are two sides to every question and beyond a doubt, rebutting arguments can be produced concerning many of the statements I have made above. I have purposely made plain statements to encourage the production of these arguments. It is only in this way that a satisfactory solution of the problem can be arrived at. When everything that can be has been said for and against both systems, then the Military Judge with an unbiased mind can don his black cap and deliver judgment.

Since writing the above I have read the essays and lectures by the late Colonel G. F. R. Henderson, C.B., in a volume entitled *The Science of War*. It must be acknowledged that Colonel Henderson was one of the most, if not *the* most sound and scientific writer on military subjects of recent times, and when reading this book, one cannot help realising the enormous advantage a well organised army possesses. Again, if one reads the Report by our present Inspector-General of Cavalry in India on certain points noticed at the recent Rawalpindi Manœuvres, it is apparent how important a matter the organisation of "Our Indian Cavalry" must be. Take, for instance, the Secunderabad Cavalry Brigade. It consists of one British Cavalry Regiment, one Non-Silladar and one Silladar Native Regiment, each with a different organisation. Can such conditions be sound and will they not tell against us in war ? So far as British

Cavalry is concerned the Silladar system cannot be adopted. It is acknowledged that this system requires certain modifications. If this be the case, would it not be as well to adopt one system which could be made applicable to all, even though it may prove more costly. Another Silladar Officer recently said to me "the transport of a Silladar Regiment would at once break down on service and a Silladar Regiment is not half so mobile as is supposed." This same Officer appeared to think that the only advantage of the Silladar system is the fact of the sowar having a pecuniary interest in the Regiment and that the "izzat" appertaining to the ownership of a share of the Regiment, however small is an asset to Government worth preserving. If it is considered that this "izzat" should be preserved, then Government must be prepared to pay for its preservation. It may also be said that the greatest advantage of the Silladar system is that each man has a direct pecuniary interest in the well-being of his horse, as if he neglects it he is liable to be "dismounted" or fined. In theory this would appear to be a very great advantage, but it can only be termed a "peace" argument after all, and so far as neglecting horses during peace is concerned, I can only say, compare the conditions now existing, *i.e.*, compare the state of the horses of Non-Silladar Regiments with those of Silladar Regiments as regards condition, turn out and general fitness. No Non-Silladar need fear such a comparison.

NOTE.—With reference to para. (8), page 177,—the allowance for the upkeep of line gear for Non-Silladar Regiments has been reduced by 2½ annas per month with effect from the 1st April 1906.

ORDERS EARLY AND ORDERS LATE.

BY MAJOR G. F. MACMUNN, D.S.O., *p.s.c.*, R.F.A.,

D.A.A.G., DERAJAT BRIGADE.

The matter of the issue of operation orders in smaller commands, such as homogenous and mixed brigades, and the ordinary "column" is worthy of some consideration. It always seems that we are apt to make "heavy weather" of what should be a very simple matter, and that a very much less tiresome business might be made of "orders" than is actually the case. It is the common complaint of the regimental officer that operation orders are late, and we constantly see commanding officers and their adjutants sitting up over a fire, tired and cross, waiting for orders to come round.

It is an absurd and unsoldierly habit. Orders, when troops are in proximity to the enemy, must be late. A very little reflection will show that this must be so in nine cases out of ten. The enemy himself may be on the move; he probably is. Scout's spies, cavalry patrols and reconnoitring officers are out; at best their reports cannot get in till late. It often happens that officer's patrols with important information cannot get away from their observation posts till dark. Reports when they come in have to be compared with other and corroborative information. It may be necessary for the chief staff officer to prepare some appreciation of the situation, and then for the commander to ponder over that same situation, and it is therefore extremely probable that orders will always be late.

It is indeed often better that they should be, since it cannot be too clearly understood that as often as not "*early orders mean counter-orders*," that is to say, schemes matured before all sources of information have yielded up their fruit often require modification. Especially is this the case when the movements of one's force depend on the movements to time and date of some other force. Countless reasons may crop up to hinder the combined action. A cypher message at midnight to be read by a flickering light in a cold wind is a favourite method by which plans are upset and tempers spoilt, and only the contrariness of things in general, and war in particular, may be to blame.

If we accept this condition of things, we must realise that late orders are a service condition, and must organise accordingly. The organisation is simple. The duty of the soldier and his officer in the field is to get all the rest he can. It is not for him to bother himself as to when he is to get up, or where he is to go; that is the business of his regimental guard and his regimental staff. Accepting therefore that sleep is our due portion, the army goes to sleep. The commanding officer knows that so far as he is concerned, unless

he is detailed to carry out some special detached operation (in which case his adjutant will wake him), his adjutant can perfectly well issue orders in prosecution of his (the C. O.'s.) wishes, and knows exactly what company or squadron is next for any duty. The adjutant sleeps near his guard tent, and near him sleep the company or squadron orderly corporals, or whatever may be the equivalent machinery for getting at individual companies and squadrons or their officers.

At 10 P.M., let us say, orders emanate from divisional or force headquarters. They reach, preferably in writing, commanders of brigades. The Brigadier may have turned in. It may, or may not, be necessary to get further orders from him. He may very likely have given his orders for several possible eventualities. This of course depends on the class of operation in progress. The staff officer then gets out his orders to the brigade. It is undesirable to send for adjutants or C. O.'s. to take orders. Even with ordinary carbons it does not take any longer to write enough copies for the separate, or at any rate the principal, units of the brigade, than it does to dictate them to half a dozen sleepy adjutants and then hear them read over again.*

The adjutants who receive the orders may find it only necessary to give the *reveille* orders to their guard, or may have to take orders from their commanding officers, or again may just issue orders to portions of their units that have to move earlier than the general *reveille* will suffice for. It may often happen that the Brigade Staff on receiving the orders find that the hour of starting will allow of orders being sent round *after* the general *reveille* hour, in which case they need take no further action that night beyond actually writing the orders.

The only alteration in ordinary acquired habits is to substitute the good one of written orders for the bad one of dictated orders. The same chain and principle runs through a whole army. Army Headquarters sends out written orders to Divisional Generals, by hand, by telegraph or telephone. The Divisional Staff should never send for Majors of Brigade, but should issue orders to Brigadiers in writing.

If the principle is carried out that subordinate forces get touch with their superior commanders, and if in brigades and divisions the orderlies or the signalling officer know the position of units, or brigades as the case may be, the comfortable and exact issue of late orders becomes a matter of simple routine.

At the recent manœuvres at Rawalpindi during the visit of H. R. H. the Prince of Wales, I heard much "grousing" at late orders, and when I ventured to impose my views on a Brigade Major, who had a similar grouse, he complained of having to sit up, to go for orders to Divisional Headquarters. It is not usual for Divisional Staffs to issue orders by dictation, except under circumstances

* I use carbon blocks that I get bound in the bazaar which give me four readable copies. —G. F. M.

favourable for such a means, and it should certainly be avoided when possible. Even, however, if the Brigade Staff have to discount their night's rest there is no reason why unit commanders should do so.

It is of course a good thing to have orders out early when circumstances permit, let that be clearly understood; but in the field it is very rarely possible or desirable. After a certain amount of staff and regimental experience in the field I have never known operation orders, when in proximity to the enemy, come out till late. Another point worth remembering is that the later orders come out the less time is there for them to get to the enemy's ears. This is a point of as much importance in civilized war in populous countries as it was in South Africa, or as it is on the Frontier, where a dozen or so of so-called "friendly" maliks may ride at the heels of a commander's political staff.

PRECIS OF FOREIGN MILITARY PAPERS.

FRENCH PAPERS.

BY CAPTAIN A. H. S. TEED, 14TH JAT LANCERS.

REVUE DE CAVALERIE.

September, October and November.

A third series of the *lettres à Plok* is begun in the September number. The writer dissents from the opinion of a new school of cavalry theorists in France who hold that there is no such thing as shock in a combat of cavalry against cavalry, the contention being that one side will inevitably turn before the actual encounter.

He proceeds to show that history teaches a different lesson, and quotes examples of combats where the shock actually took place and the fortune of the battle was decided in the subsequent *mêlée*. The big cavalry fight at Egglosheim, in which 98 squadrons were engaged in a furious hand-to-hand conflict, Rapp's and Bessières' charges against the Russian cavalry of the Guard at Austerlitz, and the battle of the Moskowa, where Murat's squadrons overthrew the horsemen of Lithuania and Ismailov are quoted as examples.

The writer attributes the rise of this new "heresy" to the fact that during the Franco-Prussian war there was only one cavalry engagement on a large scale—Ville-sur-Yron on the 16th of August 1870. But even in that one action there were several instances of attacks by cavalry against cavalry in which neither side thought of turning their backs. How, for example, did Montaign's brigade, which all accounts agree was not pursued, manage to lose 30 officers and 150 men in less than 20 minutes if it turned before meeting the Prussian cavalry?

Colonel du Picq, who is one of the most ardent apostles of the new creed, cites the battle of Eckmühl in support of his theory. In this battle 14 Austrian cuirassiers were killed to every Frenchman, and the majority of those who fell were wounded in the back: a clear proof, Colonel du Picq thinks, that they went about before the collision. In answer to this the writer quotes a contemporary account describing how the French charged through the gaps in the Austrian line, defeated it in the *mêlée* which ensued, and compelled it to fall back in disorder, the heavy losses suffered by the Austrians during their retirement being due to the fact that their cuirass had no back-piece.

That in the future there will be instances of cavalry turning before the shock of collision as there have been in the past is undeniable. During the Empire there were many occasions on which the enemy turned, rather than face the French sabres, and

Napoleon's cavalry, even with Murat at its head, had a few cases of the kind on its conscience. That instances of running away were commoner a hundred years ago than they are likely to be in the future is owing, for one reason to the dread of Murat's name and the renown of the French cavalry in those days, and for another to the leisurely pace at which the charge was delivered.

The cavalry attack of the future must be carried out at a swinging pace throughout, thanks to the improvement in the enemy's artillery, and the writer considers this compulsory increase of pace to be all in favour of his countrymen, who are singularly fitted by their ardent temperament, their skill in horsemanship, and the quality of their horses for rapidity of movement. "Let us never forget," he says, "that the pace of our cavalry must be torrential; but the torrent must be under control."

He then draws a picture of the perfect cavalry attack of the future: "The enemy suddenly becomes aware of squadrons surging over the crest of a hill where, till a few moments ago, only a few heads were visible. Pouring at full speed down the slopes of the hill they threaten his front, flanks, and perhaps rear. The suddenness of their appearance, the precision of their movements, their speed and *élan*, and the uncertainty as to their numbers and objective paralyse the enemy on whom they fall like an avalanche."

Passing on to attack formations generally, the writer considers that both the German and French cavalry employ too many men in the first line. He would like to see a comparatively large body of fresh troops held in reserve to prevent such a disaster as occurred at Ville-sur-Yron to the Chasseurs after they had taken a German battery; and in any case when attacking artillery a formed body should be kept in hand to deal with the escort. He deprecates, too, the present system of remaining in mass until within a short distance of the enemy so as to maintain the powers of manœuvring up to the last minute. The result is that there is often presented, at manœuvres, the lamentable spectacle of a body of cavalry, in order to find time for deployment, reducing its pace to a walk, when it should be increasing it. "And the position will be worse in actual war when the enemy's advance is made at a quicker pace than our commanders are accustomed to."

In discussing the duties of the independent cavalry sent ahead of a mixed force the writer alludes to the difficult position of a commander who has to decide, often on the spur of the moment, whether he will fight or not. He may gain very little even by a victory, and if his force is a large one and his losses are heavy the fortunes of the army he is serving may be injuriously affected; whereas, actually to avoid the enemy's cavalry is an act of weakness which may do a considerable amount of moral harm. The writer considers that in forming his decision a leader would do well to bear the following precepts in mind:—Firstly, his action on every occasion should serve some useful purpose, and, secondly, the

cavalry must not look to gain any advantage for itself; it works entirely for the benefit of the other arms and for the common good. In short "never fight for the sake of fighting, but to gain some moral or material advantage for the main force behind you."

The account of the operations of the German cavalry around Coulmiers in November 1870 is continued in the September number. The want of decision shown by the Cavalry General Reyan is criticised. General Reyan with 11 regiments and 4 batteries of horse artillery was on the French extreme left. Finding his force opposed by a weak brigade (two regiments) of Bavarian cuirassiers, he halted and opened fire with his artillery instead of attacking boldly and using his immense numerical superiority. The enemy, who had only one battery in action to commence with, was reinforced, and Reyan was compelled to fall back with considerable loss. His retirement had a bad effect on the *moral* of the French infantry on his right. It was in fact nearly the cause of a serious disaster. Admiral Jauréguiberry had the greatest difficulty in keeping his unseasoned recruits in their positions when they saw the retirement in confusion of this great mass of cavalry. Fortunately the German commander, Von der Tann, had not realised the demoralised condition of his opponents and judged it advisable, in view of their superior numbers, to fall back himself.

An article on the training of the individual soldier for war comments on the decrease in *esprit de corps* which is traced to the anti-military spirit of France at the present day. Various methods are proposed for instilling a sentiment of "chacun pour tous" into the recruits from the time they join, special attention being paid to those who have received just enough education to think they know better than their instructors and are inclined to look upon every officer as a snob or a slave-driver.

Initiative, or the want of it, as displayed during last autumn's manœuvres, forms the subject of an article entitled "In quarters, at manœuvres, and on service." This shortcoming, in the writer's opinion, is to be found in all ranks, and its cause is not far to seek. It lies in the system which, in the case of officers, forbids them to think for themselves, and yet confers upon them responsibilities which, considering the little real authority they have, they should not be called upon to assume. The *sous-officiers* are treated as though they were unreliable and worthless, the non-commissioned officers have little more power than the men, while as to the rank and file not one of them is considered fit to groom a horse unless he has an officer and half a dozen sergeants watching him. "Depend upon it," the writer concludes, "our men will give us on service exactly what we have asked them for in peace time, and no more. If we treat them as schoolboys now, they will behave like schoolboys out for a holiday when they go on service and their officers have no time to watch them."

The September number contains an account of the gallant conduct and death of *Maréchal-de-logis* Charton in Senegal in 1903.

A party of Moors had raided a village under French protection, and as their strength was reported to be considerable and the French force available was only 10 infantry and 10 cavalry *sipahis*, it was determined to make a night march up to the position and rush it at dawn. The robbers were marked down in a camp on the side of a hill. The infantry took up a position on one flank, and 5 *sipahis* dismounted, under Charton on the other, while the Lieutenant in command kept the remaining 5 with him as a connecting post between the two parties.

As Charton's *sipahis* were getting into position one of their horses neighed, and it was seen at once that the alarm had been given in the camp, the robbers swarmed out in far greater numbers than had been expected—they were over 200 strong—and Charton, realising that the only hope of success for his small party lay in prompt action, immediately mounted his 5 *sipahis* and charged the camp. His rapid decision and daring gallantry met with the success they deserved. The Moors, still in confusion and not realising the weakness of their opponents, fled in all directions, losing 18 killed, 30 wounded, and 30 prisoners. Charton in spite of having received six bullet wounds continued the pursuit until his horse was shot under him. His injuries were evidently mortal, but "his indomitable spirit supported him through a trying march of two days, and a two-days' journey on a river steamer before medical assistance could be obtained." He died twenty-four hours after reaching the hospital, and his remains were sent to France to be interred in his native town of Doulevant.

The usual mistakes in the cavalry work during the recent manoeuvres in Champagne are commented on. Cavalry charged unbroken infantry, dismounted troopers attacked infantry in strong positions, scouts made no attempt to conceal themselves and showed a "heroic contempt" for the enemy's rifles. The one novel point mentioned is the exhaustion of the cavalry horses. The cuirassiers lost several from sheer fatigue and the light cavalry had on more than one occasion to dismount and lead their horses home. This, the writer considers, is entirely due to the distance of the cavalry billets from the manoeuvre ground. Their position was fixed solely with a view to facilitating the collection of supplies, "but what is the good of choosing a good spot to fill up the supply wagons when the men reach it too late to empty them?"

The reduction of the number of guns in a horse artillery battery from six to four meets with the disapproval of a correspondent in the November number. He declines to admit the unhandiness of the old six-gun battery, even allowing that an increase in the number of wagons is necessitated by the introduction of a quick-firing weapon. He is disposed, however, to question the necessity for this increase, since in the cavalry combat the guns will only be employed for a very few minutes, and the expenditure of ammunition will therefore be small.

There is a long article on a subject which is troubling French officers considerably now—a method of turning out an efficient

cavalry soldier in two years. It is too technical to be of general interest.

REVUE MILITAIRE SUISSE.

October and November.

The task of revising the Swiss infantry drill book has been entrusted to a committee of officers with instructions to alter nothing in the existing book which appears sound, and to introduce nothing new the utility of which has not been demonstrated either in the field or at manœuvres. The articles in the October and November numbers deal almost entirely with barrack square formations. Battle training will probably be considered later.

The notes on the artillery in Manchuria are continued. In the September number the writer dealt with the technical details of *matériel*, methods of observation, and system of fire training adopted by the belligerents. In the October number certain other points are considered which contributed to the success of the Japanese: they are, briefly, the higher standard of their education, and the superior marksmanship of their gunners which more than compensated for the inferiority of their weapons. To these must be added two important moral factors—the national enthusiasm for the war and the old Samurai fighting spirit.

Referring to the length of time required to fight a battle under modern conditions the writer observes that the earlier engagements of this war were concluded in one or two days, whereas during its later stages battles lasted over a week. The cause, he thinks, is to be found in the numerical disparity of the belligerents at the commencement of hostilities, which was greatly in favour of the Japanese, and to the tactics employed. In the earlier battles the attacking force was inclined to carry the enemy's position with a rush, whereas later on it was found that the same result could be obtained with fewer casualties by a more deliberate advance, by wider extensions, and by the more intelligent use of cover—all of which take time.

The writer concludes his article by quoting accounts of eye-witnesses of the more important engagements, and their comments. One of them remarks—his experience is directly opposed to that of our own attachés—that the Japanese artillery when supporting an infantry attack ceased fire when the line was within six or seven hundred yards of the position. This he attributes to the defective Japanese fuse and the fear of injuring their own men. The Russians, on the other hand, when on the defensive, as they generally were, kept their guns in action till the last minute—a delay which on several occasions caused considerable losses in *matériel*.

In summing up, the writer considers the following points most worthy of notice:—The increase during the war of the use of cover, the value of the telephone, the small material effect of shell fire, the absence of artillery scouts on the Russian side, and the necessity for shields for all guns in the field.

The faults observed during the recent manœuvres in Champagne are much the same as those referred to in the *Revue de Cavalerie* in so far as that arm is concerned. The other branches of the service meet with still more unfavourable criticism, the staff in particular being condemned as inefficient. Written orders were so brief that their recipients could not understand them; and their transmission was as defective as their conception and issue; verbal orders were not repeated and were incorrectly given and vague; while gallopers, cyclists, and orderlies displayed more energy than intelligence.

The writer also comments on the ignorance displayed by all ranks of the general idea, the absence of advanced guards and scouts, the failure to utilise cover, and a general want of resemblance to the "real thing."

The first of the questions put in the September number under the heading "Problems of Sedan" is answered by extracts from General Wimpffen's diary. The General is of opinion that it was quite impossible for the French army to carry out Ducrot's orders to retire on Mezières, and brings forward several arguments in support of his action in countermanding the order.

GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR, *p.s.c.*, STAFF CAPTAIN, I. B.

Internationale Revue ueber die gesamten Armeen und Flotten (October, November, December, 1905, and January, 1906, with Supplements):—The conspicuously successful use of wireless telegraphy made by the Japanese navy and coast stations in the battle of the Tsushima Straits has determined the Germans to furnish the whole of their North Sea coast with stations fitted with such apparatus. The invention of the “wave-measurer” will doubtless have a great effect on the future employment of this mode of communication. With this instrument it is now possible to discover the so-called “tuning” of the apparatus used by the enemy and by adjusting one’s own receivers and senders thereto either to take in the enemy’s messages or to interfere with their proper despatch and receipt.

The December number gives the organisation of the troops garrisoning the principal German colonies. The following table summarises the result:—

	Officers.	Medical officers.	Officials.	Under officers.	Privates.	Natives.
German East Africa ...	47	26	22	125	220	1,471
Cameroons ...	40	11	13	66	130	1,150
German South-West Africa (excluding the troops employed against the Hereros who will return to Germany).	30	12	11	100	1,059	...
Kiauchou, China ...	73	.	22	300	6,166	60
Total ...	190	49	68	591	7,575	2,681

As a result of the war just concluded Japan has abandoned blue and adopted brown as the future colour of her soldiers’ uniforms. The lines of gold braid round the officer’s cap, the number of which denoted in French fashion the rank of the wearer, have been abolished. Rank in future will be distinguished after the English custom by badges on the shoulder straps.

This number gives some interesting details of the expenditure of ammunition on certain occasions in the Russo-Japanese war.

In six days during the battle of Liao-yang the 139th Regiment fired 96,040 rounds. The same Regiment, however, when closely attacked by the Japanese at Liu-chiu-pu in five days (13th to the 18th October) fired 351,800 rounds. On this occasion 15 Japanese corpses were found within 20 yards of the position, 580 within 100 to 150 yards. The 137th Regiment when attacked by the Japanese fired on the 1st September 189,000 rounds, and on the 2nd September 169,000 rounds.

The following details of the expenditure of ammunition by the artillery of the 35th Division are also given:—

31st August	At Syguantun	64 guns..	3,824	rounds.
1st September	...	...	2,207	"
12th October.	At Shih-lih-ho	36 ..	3,511	"
13th ..	At Schache	30 ..	3,795	"
14th ..	...	36 ..	13,120	"
15th ..	...	36 ..	9,552	"

The great expenditure of the 14th October is said to be due to the necessity of supporting the wavering Russian infantry, whose reserves were all used up.

From the January number we learn that Turkey has adopted wireless telegraphy and that all the Staff College students at Pancaldi are to be put through a course of instruction in this means of communication. This number is largely taken up with naval matters.

In the supplement No. 80, General von Boguslawski compares the duration of the battles of the last century with those which have lately taken place in the Far East. The longest battle of former times was Leipzig, which lasted three days, whilst those of the Russo-Japanese war varied from eight to ten days in duration. No account, however, has been taken of the American Civil War, in which the circumstances often approached more closely to those in Manchuria. General von Boguslawski, while recognising the advisability of waiting for more detailed reports of the late war before formulating theories of the conduct of war therefrom, gives his opinion that the general equality of modern armament and the care taken by modern armies to adapt their tactics to this armament has led to an actual reduction in the losses suffered on the battle-field, whilst prolonging the duration of the battles.

He further considers it a dangerous doctrine to teach that the frontal attack is impossible nowadays. It is only more difficult to carry out. The Japanese have shown us that it can be done. The last article also deals with the "fear of heavy loss" which the Boer war spread throughout the military world and shows how the rôle of the assailant, whilst leading to severe punishment also leads to success, especially when it is supported by Ghazi-like courage in the troops, directed by the highest training in the officers, as was the case with the Japanese.

In 1866 the Prussians had the needle-gun breech-loader against the Austrian muzzle-loader, but the Austrians employed rifled cannon against the Prussian smooth-bores. In 1870 the position

was reversed ; the Prussian Artillery, now re-armed with rifled breech-loading cannon, was much superior in armament to the French, who had only muzzle-loading guns ; but the French infantry possessed in the Chassepot an infinitely better breech-loading rifle than the Prussian needle-gun. In both wars, however, the Prussians were conspicuously successful, because they were better trained and better led. It is evident, therefore, that success in war is due far more to the training and *moral* of the troops than to excellence of armament.

The December number has an excellent appreciation of von Moltke, in which the saying of Count Schlieffen, his successor as Chief of the General Staff, is quoted. "The unique system of Moltke was to have no system." This apparent paradox is best explained in the words of the author of the article. "Whilst in other armies the opinion prevailed that the Commander-in-Chief could move his troops as though on a chess-board and could command each separate undertaking, von Moltke had already recognised that the Commander-in-Chief must limit himself to giving general instructions, and that his object could only be attained when his subordinates thoroughly understood his intentions and possessed a bold spirit of initiative in carrying them out. This principle was the starting point of all his teaching. He put no trust in rules transmitted by tradition but endeavoured to stimulate invention in his pupils of the General Staff, who listened with respect and were carried away by his ideas. He demanded from them for each problem a new means of solution, whilst only recognising as correct the logic of facts."

Following this is a very complete account, with illustrations, of artillery exhibited in 1905 at the Liege Exhibition.

No. 82 contains an interesting resumé from the "*National Zeitung*" on the provisioning of armies in war. The great size of modern armies renders this subject one of as great complexity as it is of importance. In the Imperial Manœuvres of last year in Germany an endeavour was made to feed the troops engaged by means of supply columns in a manner similar to that which the conditions of actual war would necessitate. The Guard Corps made a trial of travelling kitchens, in which the men's dinners were cooked on the march and could be served hot to them very soon after their arrival in camp. A speciality of these manœuvres was the trial of supply columns for the supply of distilled drinking water for the troops. This innovation was considered to be a very great success.

In the Imperial Manœuvres of Austria-Hungary travelling ovens on the Manfred-Weiss system were experimented with. Sixteen of these ovens produced 53,500 bread rations in 24 hours. This experiment was considered to be such a success that an Imperial order directed their adoption for the whole army. This year travelling kitchens for cooking the meat rations will be similarly experimented with.

The French bread ration at present consists of biscuit and "*pain arabe*" (apparently a sort of unleavened bread like the native *chappatti*). The one is as hard as were the celebrated "Mandalay paving stones" of our Burma Commissariat, and the other the French soldier finds difficult to digest. Captain Pillon has, however, invented a mixture of flour and bicarbonate (of soda ?) which can be carried by the soldier, and placed in his mess-tin over a fire will, in 40 minutes, produce a light, digestible and palatable bread. Experiments are also being made with refrigerators to carry rations of frozen meat with the troops.

In Russia railway kitchen-wagons have been adopted. Each wagon contains a living room for the cooks, three ovens which can cook for 700 men, and a cold-storage room and pantry for the provisions carried.

In Japan the soldier's mess-tin consists of a receptacle, in which rice can be boiled, and of a second, in which meat and vegetables can be cooked, whilst water can be boiled in the water-bottle. The Japanese have also largely made use of the Russian kitchen-carts, of which they captured some 214.

No. 67, German Supplement, gives an account of the various specially-trained mountain and Alpine troops kept up by France, Switzerland and Italy.

No. 68 is devoted to the Bulgarian army, which is organised in 9 Divisions, and which is based on compulsory service of the manhood of the country from 21 to 39 years of age. Of these 19 years, 2 years are passed with the colours, the remaining 17 in the reserves.

No. 69 contains an account of the Imperial Manœuvres in Germany in 1905. The experimental provisioning of troops at these manœuvres under strict war-conditions has already been noticed above. The field telephone was also given a very exhaustive trial with results that are said to have been astonishingly successful.

Militär Wochenblatt (Nos. 114—160 of 1905):—No. 122 contains an interesting account of some experiments carried out at the Austrian School of Musketry at Bruck. These experiments were carried out by average teams and were repeated a great number of times. The results published may therefore be taken as a fair average. They tend to show that while the *percentage* of hits to rounds fired is decreased by increasing the rapidity of the rate of fire, yet the number of actual hits obtained within a given time is increased, that is, the effective value of the fire in killing the enemy is increased. At unknown ranges the difference in favour of rapid fire is also much greater. This is an important result, for men who are trained to fire slowly will on service either continue to fire slowly or else their fire will degenerate into hurried unaimed fire. The modern battle calls for the utilisation of fleeting opportunities, such as the momentary emergence from cover and rush forward of an attacking line, by pouring in a volume of rapid aimed fire. It is easier to replace ammunition than to replace wasted men, while wasted time is irrecoverable. These experiments therefore tend to prove that

every endeavour should be made in peace to train the soldier to deliver *rapid aimed fire*.

Nos. 123-5-7-8 and 138 have a series of articles on the experiences of the Russo-Japanese war with special reference to Infantry. The articles are, however, too long and complex to be dealt with here.

No. 129 contains a critique on the book by Baron Freytag-Loringhoven, Chief of the 1st, Historical, Section of the German General Staff on the power of personality in war. This book is a collection of the opinions of Clausewitz illustrated by the author by examples taken from military history. The book has been extraordinarily well reviewed in all the German papers, which declare it to be the quintessence of the spirit of Clausewitz.

In No. 137 General Richter discusses the use which may be made of Field Artillery in fighting by night. He is of opinion that the recoil-absorbing carriages of modern quick-firing guns, which will enable guns laid by day or by means of auxiliary sights to continue firing all night on the same targets, and even by means of the traversing gear to change their targets, will lead to a considerable increase in the employment of artillery in fighting by night. In the attack the artillery will be able to sweep the defenders' position by fire and thus prevent him working to improve his defences or keep him on the alert and disturb his rest, whilst the smoke and dazzling light of the bursting shell will serve to hinder greatly the observation by the defence of the movements of the attacker's infantry. The defending artillery will in a similar manner be able to hinder the advance of the attacking forces to closer fire-positions under cover of the night by keeping up a fire on the known roads, thus forcing the attacker to abandon them and to move only across country. Observers provided with telephones placed well on the flanks will be able to direct the use of the guns in night-fighting.

No. 145 gives some interesting figures of the work before the Russian military authorities in returning to Europe their forces in Manchuria. The European portion of these consist of 15½ Corps and 5½ Cavalry Divisions. A Russian Army Corps requires 100 railway trains for its transport, whilst their Cavalry Divisions require 27 trains. As troop-trains cannot be run through without long stops it is calculated that 40 days will be necessary for the movement of each unit. Allowing 10 troop-trains a day on the line seven months must elapse before this army can be replaced in its ordinary garrisons.

Nos. 153 and 154 contain an interesting account of the escape of the Archduke Ferdinand and the Austrian cavalry from the surrender of Mack at Ulm.

ITALIAN PAPERS.

BY CAPTAIN W. L. J. CAREY, R.A., D.A.D.G.O.

"RIVISTA DI ARTIGLIERIA E GENIO."

December 1905.

The "Russki Invalid" recently published a noteworthy article compiled by the Commander of the 35th Division on the principal features of the last war. There was a resumé of this document in the last number of the "France Militaire" from which we here give the portion which concerns the action of the artillery.

The great range and rapidity of fire of the modern field gun, its adaptability for firing from covered positions, and its small efficiency against earthworks and objects which cannot be observed, are the elements which regulate the employment of Field Artillery to-day. Whenever troops show themselves in the open in the radius of action of shrapnel fire, they are liable to suffer terrible losses in a few minutes, and it should be noted that now artillery fire ranges to over 5 kilometres. On the other hand, by reason of its small explosive power, shrapnel does no damage whatever to matériel.

As regards common shell with percussion fuze its use is greatly limited by the difficulty of attaining a sufficient degree of accuracy. Consequently, the duty of the Field Artillery is essentially the destruction of animate objects; the usual order of fire is the "storm" or "*rafale*."

The artillery duel no longer exists in the sense formerly attributed to that phrase. A battery, the range of which has been obtained by the enemy's guns, is compelled to suspend its own fire. When the enemy has fired a few "*rafales*" at it, he ceases firing, or changes to slow fire, to avoid waste of ammunition and then the battery can come into action again. It is therefore impossible to annihilate artillery, the detachments of which are sheltered in trenches, or as the French Journal adds, by shields as in France. The artillery combat should have the object of keeping hostile artillery under the continual threat of a "*rafale*," so as to prevent its firing on friendly infantry. Well protected positions, good preparation of fire, and a judicious organisation of observation, allow of our keeping numerous batteries available for attacking hostile infantry, or for concentrating their fire on a point chosen for attack.

The great range much facilitates the concentration of fire, without its being necessary to mass artillery in long continuous lines, which would be at once discovered by the enemy. On the

cavalry must not look to gain any advantage for itself, it works entirely for the benefit of the other arms and for the common good. In short "never fight for the sake of fighting, but to gain some moral or material advantage for the main force behind you."

The account of the operations of the German cavalry around Coulmiers in November 1870 is continued in the September number. The want of decision shown by the Cavalry General Reyau is criticised. General Reyau with 11 regiments and 4 batteries of horse artillery was on the French extreme left. Finding his force opposed by a weak brigade (two regiments) of Bavarian cuirassiers, he halted and opened fire with his artillery instead of attacking boldly and using his immense numerical superiority. The enemy, who had only one battery in action to commence with, was reinforced, and Reyau was compelled to fall back with considerable loss. His retirement had a bad effect on the *morale* of the French infantry on his right. It was in fact nearly the cause of a serious disaster. Admiral Jaureguiberry had the greatest difficulty in keeping his unseasoned recruits in their positions when they saw the retirement in confusion of this great mass of cavalry. Fortunately the German commander Von der Tann had not realised the demoralised condition of his opponents and judged it advisable in view of their superior numbers to fall back himself.

An article on the training of the individual soldier for war comments on the decrease in *esprit de corps* which is traced to the antimilitary spirit of France at the present day. Various methods are proposed for instilling a sentiment of *chaqueun pour tous* into the recruits from the time they join, special attention being paid to those who have received just enough education to think they know better than their instructors and are inclined to look upon every officer as a snob or a slave driver.

Initiative, or the want of it, as displayed during last year's numerous manoeuvres, forms the subject of an article entitled "In quarters, at manoeuvres, and on service." This shortcoming in the writer's opinion is to be found in all ranks, and its cause is not far to seek. It is of the system which, in the case of officers, forbids them to think for themselves, and yet confers upon them responsibilities which, considering the little real authority they have, they should not be called upon to assume. The *sous-officiers* are treated as though they were uneducated and worthless, the non-commissioned officers have little more power than the men, while as to the rank and file, not one of them is considered fit to groom a horse, unless he has a officer, and half a dozen sergeants watching him. Depend upon it, the writer concludes, our non-commissioned officers will give us on service exactly what we have asked them for in peace time, and no more. If we treat them as slaves, says now, they will behave like slaves, says not long hence when they go on service, and their officers have no time to watch them.

The September number contains an account of the general conduct and death of *Monsieur de Lapeyrolle* at Chateau in Saugol in 1870.

A party of Moors had raided a village under French protection, and as their strength was reported to be considerable and the French force available was only 10 infantry and 10 cavalry *sipathis*, it was determined to make a night march up to the position and rush it at dawn. The robbers were marked down in a camp on the side of a hill. The infantry took up a position on one flank, and 5 *sipathis* dismounted, under Charton on the other, while the Lieutenant in command kept the remaining 5 with him as a connecting post between the two parties.

As Charton's *sipathis* were getting into position one of their horses neighed, and it was seen at once that the alarm had been given in the camp, the robbers swarmed out in far greater numbers than had been expected—they were over 200 strong—and Charton, realising that the only hope of success for his small party lay in prompt action, immediately mounted his 5 *sipathis* and charged the camp. His rapid decision and daring gallantry met with the success they deserved. The Moors, still in confusion and not realising the weakness of their opponents, fled in all directions, losing 18 killed, 30 wounded, and 30 prisoners. Charton in spite of having received six bullet wounds continued the pursuit until his horse was shot under him. His injuries were evidently mortal, but "his indomitable spirit supported him through a trying march of two days, and a two-days' journey on a river steamer before medical assistance could be obtained." He died twenty-four hours after reaching the hospital, and his remains were sent to France to be interred in his native town of Doulevant.

The usual mistakes in the cavalry work during the recent manoeuvres in Champagne are commented on. Cavalry charged unbroken infantry, dismounted troopers attacked infantry in strong positions, scouts made no attempt to conceal themselves and showed a "heroic contempt" for the enemy's rifles. The one novel point mentioned is the exhaustion of the cavalry horses. The cuirassiers lost several from sheer fatigue and the light cavalry had on more than one occasion to dismount and lead their horses home. This, the writer considers, is entirely due to the distance of the cavalry billets from the manoeuvre ground. Their position was fixed solely with a view to facilitating the collection of supplies, "but what is the good of choosing a good spot to fill up the supply wagons when the men reach it too late to empty them?"

The reduction of the number of guns in a horse artillery battery from six to four meets with the disapproval of a correspondent in the November number. He declines to admit the unhandiness of the old six-gun battery, even allowing that an increase in the number of wagons is necessitated by the introduction of a quick-firing weapon. He is disposed, however, to question the necessity for this increase, since in the cavalry combat the guns will only be employed for a very few minutes, and the expenditure of ammunition will therefore be small.

There is a long article on a subject which is troubling French officers considerably now—a method of turning out an efficient

cavalry soldier in two years. It is too technical to be of general interest.

REVUE MILITAIRE SUISSE.

October and November.

The task of revising the Swiss infantry drill book has been entrusted to a committee of officers with instructions to alter nothing in the existing book which appears sound, and to introduce nothing new the utility of which has not been demonstrated either in the field or at manœuvres. The articles in the October and November numbers deal almost entirely with barrack square formations. Battle training will probably be considered later.

The notes on the artillery in Manchuria are continued. In the September number the writer dealt with the technical details of *material*, methods of observation, and system of fire training adopted by the belligerents. In the October number certain other points are considered which contributed to the success of the Japanese: they are, briefly, the higher standard of their education, and the superior marksmanship of their gunners which more than compensated for the inferiority of their weapons. To these must be added two important moral factors—the national enthusiasm for the war and the old Samurai fighting spirit.

Referring to the length of time required to fight a battle under modern conditions, the writer observes that the earlier engagements of this war were concluded in one or two days, whereas during its later stages battles lasted over a week. The cause he thinks is to be found in the numerical disparity of the belligerents at the commencement of hostilities, which was greatly in favour of the Japanese; and in the tactics employed. In the earlier battles the attacking force was inclined to carry the enemy's position with a rush, whereas later on it was found that the same result could be obtained with fewer casualties by a more deliberate advance, by wing extensions and by the more intelligent use of cover—all of which take time.

The writer concludes his article by quoting accounts of eye-witnesses of the more important engagements, and their comments. One of them remarks: "his experience is directly opposed to that of our own attaches, that the Japanese artillery when supporting an infantry attack ceased fire when the line was within six or seven hundred yards of the position." Thus he attributes to the defect of Japanese fuse and the fear of maiming their own men. The Russians, on the other hand, when on the defensive as they generally were, kept their guns in action till the last minute, a delay which on several occasions caused considerable loss in *material*.

In summing up, the writer considers the following points most worthy of notice:—The increase during the war of the use of cover, the value of the telephone, the small material effect of shrapnel, the absence of artillery scouts on the Russian side, and the necessity for shields for all guns in the field.

The faults observed during the recent manœuvres in Champagne are much the same as those referred to in the *Revue de Cavalerie* in so far as that arm is concerned. The other branches of the service meet with still more unfavourable criticism, the staff in particular being condemned as inefficient. Written orders were so brief that their recipients could not understand them; and their transmission was as defective as their conception and issue; verbal orders were not repeated and were incorrectly given and vague; while gallopers, cyclists, and orderlies displayed more energy than intelligence.

The writer also comments on the ignorance displayed by all ranks of the general idea, the absence of advanced guards and scouts, the failure to utilise cover, and a general want of resemblance to the "real thing."

The first of the questions put in the September number under the heading "Problems of Sedan" is answered by extracts from General Wimpffen's diary. The General is of opinion that it was quite impossible for the French army to carry out Ducrot's orders to retire on Mézières, and brings forward several arguments in support of his action in countermanding the order.

GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR, *psal.* STAFF CAPTAIN, I. B.

Internationale Revue der gesunden Armeen und Flotten (October, November, December, 1905, and January, 1906, with Supplements). The conspicuously successful use of wireless telegraphy made by the Japanese navy and coast stations in the battle of the Tsushima Straits has determined the Germans to furnish the whole of their North Sea coast with stations fitted with such apparatus. The invention of the "wave-measurer" will doubtless have a great effect on the future employment of this mode of communication. With this instrument it is now possible to discover the so-called "tuning" of the apparatus used by the enemy and by adjusting one's own receivers and senders thereto either to take in the enemy's messages or to interfere with their proper despatch and receipt.

The December number gives the organisation of the troops garrisoning the principal German colonies. The following table summarises the result:—

	Officers	Medical Officers	Officiants	Lower Officers	Privates	Natives
German East Africa	47	26	22	125	220	1,471
Camerouna	40	11	13	66	130	1,115
German South West Africa (excluding the troops engaged against the Hereros who will return to Germany)	30	12	11	100	1,029	
Kiauchow China	73		22	300	6,166	60
Total	190	49	68	591	7,525	2,646

As a result of the war just concluded Japan has abandoned blue and adopted brown as the future colour of her soldiers' uniforms. The lines of gold braid round the officers' caps, the numberings which denoted in French fashion the rank of the wearer, have been abolished. Rank in future will be distinguished after the English custom by badges on the shoulder straps.

This number gives some interesting details of the expenditure of ammunition on certain occasions in the Russo-Japanese war.

In six days during the battle of Liao-yang the 139th Regiment fired 96,040 rounds. The same Regiment, however, when closely attacked by the Japanese at Liu-chiu-pu in five days (13th to the 18th October) fired 351,800 rounds. On this occasion 15 Japanese corpses were found within 20 yards of the position, 580 within 100 to 150 yards. The 137th Regiment when attacked by the Japanese fired on the 1st September 189,000 rounds, and on the 2nd September 169,000 rounds.

The following details of the expenditure of ammunition by the artillery of the 35th Division are also given:—

31st August	At Syguantun	64 guns..	3,824	rounds.
1st September	...	...	2,207	"
12th October.	At Shih-lih-ho	36 ..	3,511	"
13th ..	At Schache	30 ..	3,795	"
14th ..	...	36 ..	13,120	"
15th ..	...	36 ..	9,552	"

The great expenditure of the 14th October is said to be due to the necessity of supporting the wavering Russian infantry, whose reserves were all used up.

From the January number we learn that Turkey has adopted wireless telegraphy and that all the Staff College students at Pancaldi are to be put through a course of instruction in this means of communication. This number is largely taken up with naval matters.

In the supplement No. 80, General von Boguslawski compares the duration of the battles of the last century with those which have lately taken place in the Far East. The longest battle of former times was Leipzig, which lasted three days, whilst those of the Russo-Japanese war varied from eight to ten days in duration. No account, however, has been taken of the American Civil War, in which the circumstances often approached more closely to those in Manchuria. General von Boguslawski, while recognising the advisability of waiting for more detailed reports of the late war before formulating theories of the conduct of war therefrom, gives his opinion that the general equality of modern armament and the care taken by modern armies to adapt their tactics to this armament has led to an actual reduction in the losses suffered on the battle-field, whilst prolonging the duration of the battles.

He further considers it a dangerous doctrine to teach that the frontal attack is impossible nowadays. It is only more difficult to carry out. The Japanese have shown us that it can be done. The last article also deals with the "fear of heavy loss" which the Boer war spread throughout the military world and shows how the rôle of the assailant, whilst leading to severe punishment also leads to success, especially when it is supported by Ghazi-like courage in the troops, directed by the highest training in the officers, as was the case with the Japanese.

In 1866 the Prussians had the needle-gun breech-loader against the Austrian muzzle-loader, but the Austrians employed rifled cannon against the Prussian smooth-bores. In 1870 the position

was reversed, the Prussian Artillery, now re-armed with rifled breech-loading cannon, was much superior in armament to the French, who had only muzzle-loading guns, but the French infantry possessed in the Chassepot an infinitely better breech-loading rifle than the Prussian needle-gun. In both wars, however, the Prussians were conspicuously successful, because they were better trained and better led. It is evident, therefore, that success in war is due far more to the training and *moral* of the troops than to excellence of armament.

The December number has an excellent appreciation of von Moltke, in which the saying of Count Schlieffen, his successor as Chief of the General Staff, is quoted, "The unique system of Moltke was to have no system." This apparent paradox is best explained in the words of the author of the article, "Whilst in other armies the opinion prevailed that the Commander-in-Chief could move his troops as though on a chess-board and could command each separate undertaking, von Moltke had already recognised that the Commander-in-Chief must limit himself to giving general instructions and that his object could only be attained when his subordinates thoroughly understood his intentions and possessed a bold spirit of initiative in carrying them out. This principle was the starting-point of all his teaching. He put no trust in rules transmitted by tradition but endeavoured to stimulate invention in his pupils of the General Staff, who listened with respect and were carried away by his ideas. He demanded from them for each problem a new means of solution whilst only recognising as correct the logical facts."

Following this is a very complete account, with illustrations of artillery exhibited in 1905 at the Large Exhibition.

No. 82 contains an interesting resume from the *Neue Zeitung* on the provisioning of armies in war. The great size of modern armies renders this subject one of as great complexity as it is of importance. In the Imperial Manœuvres of last year in Germany an endeavour was made to feed the troops engaged by means of supply columns in a manner similar to that which the conditions of actual war would necessitate. The General Corps were a trial of travelling kitchens, in which the men's dinners were cooked on the march and could be served hot to them very soon after their arrival in camp. A specialty of these manœuvres was the trial of supply columns for the supply of distilled drinking water for the troops. This innovation was considered to be a very great success.

In the Imperial Manœuvres of Austria-Hungary travelling ovens on the Muntel Weiss system were experimented with. Sixteen of these ovens produced 53,500 bread rations in 24 hours. This experiment was considered to be such a success that an Imperial order directed their adoption for the whole army. Fifty year travelling kitchens for cooking the meat rations will be fully experimented with.

The French bread ration at present consists of biscuit and "*pain arabe*" (apparently a sort of unleavened bread like the native *chappatti*). The one is as hard as were the celebrated "Mandalay paving stones" of our Burma Commissariat, and the other the French soldier finds difficult to digest. Captain Pillon has, however, invented a mixture of flour and bicarbonate (of soda ?) which can be carried by the soldier, and placed in his mess-tin over a fire will, in 40 minutes, produce a light, digestible and palatable bread. Experiments are also being made with refrigerators to carry rations of frozen meat with the troops.

In Russia railway kitchen-wagons have been adopted. Each wagon contains a living room for the cooks, three ovens which can cook for 700 men, and a cold-storage room and pantry for the provisions carried.

In Japan the soldier's mess-tin consists of a receptacle, in which rice can be boiled, and of a second, in which meat and vegetables can be cooked, whilst water can be boiled in the water-bottle. The Japanese have also largely made use of the Russian kitchen-carts, of which they captured some 214.

No. 67, German Supplement, gives an account of the various specially-trained mountain and Alpine troops kept up by France, Switzerland and Italy.

No. 68 is devoted to the Bulgarian army, which is organised in 9 Divisions, and which is based on compulsory service of the manhood of the country from 21 to 39 years of age. Of these 19 years, 2 years are passed with the colours, the remaining 17 in the reserves.

No. 69 contains an account of the Imperial Manœuvres in Germany in 1905. The experimental provisioning of troops at these manœuvres under strict war-conditions has already been noticed above. The field telephone was also given a very exhaustive trial with results that are said to have been astonishingly successful.

Militär Wochenblatt (Nos. 114—160 of 1905):—No. 122 contains an interesting account of some experiments carried out at the Austrian School of Musketry at Bruck. These experiments were carried out by average teams and were repeated a great number of times. The results published may therefore be taken as a fair average. They tend to show that while the *percentage* of hits to rounds fired is decreased by increasing the rapidity of the rate of fire, yet the number of actual hits obtained within a given time is increased, that is, the effective value of the fire in killing the enemy is increased. At unknown ranges the difference in favour of rapid fire is also much greater. This is an important result, for men who are trained to fire slowly will on service either continue to fire slowly or else their fire will degenerate into hurried unaimed fire. The modern battle calls for the utilisation of fleeting opportunities, such as the momentary emergence from cover and rush forward of an attacking line, by pouring in a volume of rapid aimed fire. It is easier to replace ammunition than to replace wasted men, while wasted time is irrecoverable. These experiments therefore tend to prove that

every endeavour should be made in peace to train the soldier to deliver *rapid aimed fire*.

Nos. 123-5-7-8 and 138 have a series of articles on the experiences of the Russo-Japanese war with special reference to Infantry. The articles are, however, too long and complex to be dealt with here.

No. 129 contains a critique on the book by Baron Froytag-Löringhoven, Chief of the 1st, Historical, Section of the German General Staff on the power of personality in war. This book is a collection of the opinions of Clausewitz illustrated by the author by examples taken from military history. The book has been extraordinarily well reviewed in all the German papers, which declare it to be the quintessence of the spirit of Clausewitz.

In No. 137 General Richter discusses the use which may be made of Field Artillery in fighting by night. He is of opinion that the recent absorbing earnings of modern quick firing guns, which will enable guns, laid by day or by means of auxiliary sights to continue firing all night on the same targets and even by means of the traversing gear to change their targets, will lead to a considerable increase in the employment of artillery in fighting by night. In the attack the artillery will be able to sweep the defenders' position by fire and thus prevent him working to improve his defences or keep him on the alert and disturb his rest, whilst the smoke and dazzling light of the bursting shell will serve to hinder greatly the observation by the defence of the movements of the attacker's infantry. The defending artillery will in a similar manner be able to hinder the advance of the attacking forces to closer fire positions under cover of the night by keeping up a fire on the known roads, thus forcing the attacker to abandon them and to move only across country. Observers provided with telephones placed well on the flanks will be able to direct the use of the guns in night fighting.

No. 145 gives some interesting figures of the work done by Russian military authorities in returning to Europe their forces to Manchuria. The European portion of these consist of 151 Corps and 51 Cavalry Divisions. A Russian Army Corps requires 100 railway trains for its transport whilst their Cavalry Divisions require 27 trains. As troop trains cannot be run through without long stops it is calculated that 40 days will be necessary for the movement of each unit. Allowing 10 troop trains a day on the line seven months must elapse before this army can be replaced in its ordinary garrisons.

Nos 143 and 144 contain an interesting account of the escape of the Ansbach Fortress and of the Ansbach cavalry from the siege of at Mook at Chin.

ITALIAN PAPERS.

BY CAPTAIN W. L. J. CAREY, R.A. D.A.D.G.O.

"RIVISTA DI ARTIGLIERIA E GENIO."

December 1905.

The "Russki Invalid" recently published a noteworthy article compiled by the Commander of the 35th Division on the principal features of the last war. There was a resumé of this document in the last number of the "France Militaire" from which we here give the portion which concerns the action of the artillery.

The great range and rapidity of fire of the modern field gun, its adaptability for firing from covered positions, and its small efficiency against earthworks and objects which cannot be observed, are the elements which regulate the employment of Field Artillery to-day. Whenever troops show themselves in the open in the radius of action of shrapnel fire, they are liable to suffer terrible losses in a few minutes, and it should be noted that now artillery fire ranges to over 5 kilometres. On the other hand, by reason of its small explosive power, shrapnel does no damage whatever to matériel.

As regards common shell with percussion fuze its use is greatly limited by the difficulty of attaining a sufficient degree of accuracy. Consequently, the duty of the Field Artillery is essentially the destruction of animate objects; the usual order of fire is the "storm" or "*rafale*."

The artillery duel no longer exists in the sense formerly attributed to that phrase. A battery, the range of which has been obtained by the enemy's guns, is compelled to suspend its own fire. When the enemy has fired a few "*rafales*" at it, he ceases firing, or changes to slow fire, to avoid waste of ammunition and then the battery can come into action again. It is therefore impossible to annihilate artillery, the detachments of which are sheltered in trenches, or as the French Journal adds, by shields as in France. The artillery combat should have the object of keeping hostile artillery under the continual threat of a "*rafale*," so as to prevent its firing on friendly infantry. Well protected positions, good preparation of fire, and a judicious organisation of observation, allow of our keeping numerous batteries available for attacking hostile infantry, or for concentrating their fire on a point chosen for attack.

The great range much facilitates the concentration of fire, without its being necessary to mass artillery in long continuous lines, which would be at once discovered by the enemy. On the

contrary, it is very necessary to distribute batteries over the ground in order to conceal them and to render ranging difficult for the enemy ; moreover, this dividing up of the artillery (the units of which, however, are always connected with one another) enables fire to be more effectively directed on all parts of the ground, in front and at the sides.

Artillery can do nothing without a service of observation organised with the utmost care, with officers and men who should personally observe along the whole of the front. Information collected by the other arms should also be procured ; it follows from this that the telephone has become an indispensable instrument for Field Artillery, for transmitting information. The staff should be careful to communicate to the artillery all the information which reaches them. The Japanese had an admirably organised service of observation, and yet it frequently happened that they fired on unoccupied country.

It is desirable that commanders of batteries should be able to see over as large an extent of country as possible, so as to be able to decide on their line of action ; so also it would be well if the ground in front was visible from the batteries ; " in such cases shields, which are a protection against shrapnel bullets, would prove extremely useful." But artillery should also be capable of firing when behind cover, and this will often render it necessary for commanders of batteries or groups to stay at long distances away from their units, and only to communicate with them by telephone. It is essential that the whole of the ground in front should be visible to the observers.

In order to get away from a position known to the opponent, and thoroughly searched by his fire it is often necessary for batteries to make small changes of position ; these movements should be carried out entirely by man-handling, and without being seen, otherwise they are doomed to failure. Changes of position in order to get nearer the object have no *raison d'être* unless at distances over 3,500 metres.

In preparing the attack it is better to remain in the positions already occupied, so that fire should not be interrupted. It will be necessary, however, to send to the front a few of the reserve batteries and for choice to use these batteries for attacking the enemy in flank. Naturally, whenever possible, it will be advantageous to get as near as possible to the position, which is to be attacked, because this has great moral effect on the enemy ; but it is not indispensable, nor always possible. When the enemy retires, it is absolutely necessary to advance on the conquered position as fast as is possible for artillery.

Firing over the heads of one's own infantry is inevitable and frequent. This is the only way to avoid collecting artillery in vulnerable masses, to utilise to the full the range of the gun (shifting and concentrating the fire of many batteries on the same objective), and to obtain the full value of the artillery, as a continual menace to any movement of the enemy. The fuzes should act well and there should be no prematures.

The commander of the troops distributes his artillery, indicates the positions to be occupied and, in a general way, the objectives; he keeps the commander of the artillery informed of how the battle is going and verbally entrusts new duties to him. The artillery commander distributes the duties among his batteries, and organises the service of observation on the front and flanks of his entire radius of action, so as to be at once apprised of the appearance of suitable objectives. He also sees to the ammunition supply.

It has already been pointed out that it is only by means of a well-organised service of observation and intelligence that the full effect of artillery can be obtained; in fact it is only by these means that the battery commanders can form a decision as to their action. The staff should never forget it, and the other arms also should communicate to the artillery, any information gained while the latter in its turn is expected to share its information.

Against visible objectives the most effective order of fire is "*rafales*" of shrapnel. When it was desired to attack concealed objectives, the Japanese used to direct slow fire on the ground behind the position; preferably against the points where reserves, limbers, &c., were supposed to be, and fired a "*rafale*" whenever the least movement took place. Against material obstacles (villages, trenches, &c.), the Russians made use of time shrapnel and percussion shrapnel at the same time* (generally two guns in each battery fired percussion shell); but when they had mortars at their disposal, they employed common shell with these pieces, instead of percussion shrapnel with field guns.

Against the above-mentioned objectives the Japanese used to fire common high-explosive shell and shrapnel, simultaneously or successively; with common shell they compelled troops under cover to move, and then attacked with shrapnel, inflicting loss upon them.

The writer in the "*France Militaire*" observes that from other sources also it appears that the Russians felt the want of high-explosive shell for field guns very much in the preparation of the attack of positions.

Before getting the guns into position a complete reconnaissance of the objectives must be made, the distances must be judged, and a sketch made of the ground visible, showing the most important points and giving the corresponding data for firing. If necessary the chief distances are afterwards verified with a few ranging shots. As soon as possible earth shelters are built for the detachments, that is to say, trenches 4 to 5 feet deep, and 3 or 4 paces long, the earth excavated from the hole being thrown up in front; these trenches are sufficient for the protection of the detachments. The ammunition is taken out of the wagons, and placed near the guns in these trenches. The wagons and limbers are kept under cover at not more than 550 yards in rear or to a flank. The supply of ammunition should be by hand, because the movements of wagons would reveal the position of the battery to the enemy.

* It should be remembered that the Russian Field Artillery had no common shell.

A special escort should be assigned to the artillery, because the infantry, having its hands already full on its own account, will with difficulty be persuaded to come to the assistance of a neighbouring battery, if it has not been expressly charged with the duty. It is calculated that on the march one company per battery, and in position one company for every two batteries, is required.

In the Russian article it is prominently brought out that the 8-gun batteries must be given up, and 6 or 4 guns adopted for this unit. "In fact," it says, "if the battery is suitably provided with ammunition, 4 guns are enough to perform all the duties usually thrown on an 8-gun battery, because it is scarcely ever necessary to employ the maximum rate of fire." The 4-gun battery is less cumbersome, more mobile, and adapts itself better to the ground."

Good range-finders and telescopes are required for the battery to discover the objectives, and good binoculars for the observers; these instruments are absolutely indispensable.

OBITUARY NOTICE.

Officers who were at Pekin in 1900-1 will regret to hear of the death of Captain Frank DeWitt Ramsey, 9th Infantry, U.S.A., which occurred at Washington on the 18th January 1906 from pneumonia.

He was on the General Staff of the American Army and was Secretary to the Military Order of the Dragon. He was a real good friend to those who knew him and at all times a genial companion.

TACTICAL SCHEME COMPETITION, JULY 1905.

REMARKS ON SOLUTIONS BY THE ADJUDICATING OFFICER.

The eleven solutions sent in all show considerable knowledge of principles. That by "Cruachan" is adjudged the best, and that by "Intus si recte ne labora" the second best. "Panjabi," "Esse quam videri," "Vorwärts" and "The Parting of the Ways" all sent in well thought out solutions.

It is interesting to note that several competitors, after expressing excellent views and appreciations, failed to act up to them when issuing actual orders. In war, the "whole Hog" pays. Napoleon and Lee, when they had determined on a course of action, pursued it with undivided energy.

In the competitions under discussion, the Commanders of Red detached Force all recognised that they must hold the high ground west of the Itchen. Yet only one or two took steps to secure it while yet they had time. They mostly waited to get it in the morning when it should have been too late.

Similarly Blue appreciations almost all admitted that if Red were holding these western heights, then Blue would have a stout fight and suffer delay on the Itchen, and they also expected Red to push on thither late that night or early in the morning. Not one had the courage of his opinions, and pushed on the advanced brigade or a couple of battalions to secure that ground at night before Red Infantry had come up.

The orders written have not all been good. In several cases excellent plans and appreciations have been spoilt by lengthy rigmaroles of orders which ignored the ordinary knowledge of soldierly habits and military routine that unit commanders must possess.

Orders in the field, especially the orders for the smaller forces, are often written in a cold wind by the light of a flickering lamp by very tired men. They are read and copied by still more tired adjutants and commanding officers, by still more flickery lanterns. Operation orders *must* be brief and pithy; long orders providing for every possible or impossible eventuality are invariably misunderstood. If unit commanders know what they have to do, they will dispose suitable companies, and order suitable meals, &c. If commanding officers cannot carry out the ordinary details of their trade without being reminded in operation orders, the sooner they are dismissed the better. At any rate it is best to trust them, for they are not the incompetent forgetful folk that some of the writers of the orders in question would make them out.

As regards appreciations, these latter should be brief and must as a rule end with a "definite proposal for action."

SOLUTION BY "CRUACHAN."

MAJOR A. A. E. CAMPBELL, 25TH PUNJABIS.

1ST EXERCISE.—(a) *Colonel A's views on the situation*
at 6 p.m., 10th October.

Colonel A. leaves ABINGDON on the afternoon of the 10th October with orders "to delay any Blue advance on the ITCHEN."

We gather from various indications that Colonel A. is intended to halt at DAREHAM that night, marching by the AVISTOWN HOUSE—BOFIELD road (7 miles), and to advance next day to the river, when he would be supported by a few troops—not amounting to a Division—pushed forward after him to BOFIELD or DAREHAM. Nothing seems to have been known, at the time his small force left ABINGDON, of Blue being already on the march to the same river line.

Colonel A. has marched on the 10th October probably from ABANA—a total of 15 miles by the time he reaches DAREHAM. The weather is dry and hot for the time of year; the roads are dusty.

On arrival at DAREHAM, he is surprised by his Mounted Infantry Commander's report, and simultaneously receives a telegram which iterates his instructions in a way that can only be impressive, and yet states that the troops to be at BOFIELD next day will be one Division only, and that they will not arrive until 5 P.M. on the 11th.

It is obvious to Colonel A. that Red G.O.C. has had some news about Blue, or he would not have wired what amounts to a repetition of his original instructions only an hour or so after they had been delivered; but no details are given. It strikes Colonel A. that his G.O.C. cannot have received very reliable news, but only news sufficiently important to render it advisable to put him with his small advanced force on the *qui vive*, for though a Division is to be at BOFIELD to support him, it is not to arrive until 24 hours later. The Mounted Infantry Commander's report makes it clear that the Blue Cavalry are not as yet in great strength and apparently have no guns with them, as none were used. They had been pursued back across the ITCHEN, but at 5 P.M. held the crossings. There were signs of a camp in the direction of KARVAN HOUSE, but no mention of Infantry. The Cavalry, however, does not seem to be in sufficient strength to be acting alone, so far from the frontier. If the camp does not indicate the presence of Infantry, the weakness of the Cavalry does. His G.O.C. therefore seems, to Colonel A., unaware of the close proximity of Blue, still less of Blue in strength, and in Colonel A's judgment, there are Infantry as well as Cavalry on the ITCHEN, and therefore in all probability guns as well, and at 5 P.M. of the day on which he is directed to "hold the line of the ITCHEN as long as possible," Blue is already in possession of the crossings.

(It may be that Red G.O.C. has had full and true information, but that he is absolutely prevented by circumstances from moving more promptly or in greater strength. I prefer to assume that he had merely heard of the advance, and had no idea of a strong hostile force being nearer by half to the ITCHEN than himself).

The sun sets about 5-15 P.M., and at 6 P.M. it is nearly dark. It is impossible to attempt to force the crossings at that hour against an unknown strength of the enemy with men fairly weary after a long, hot, and dusty march. Nevertheless, though dark, the night is fine. It is Red country, and the neighbourhood is familiar to many, if not most. Blue will almost certainly seize the heights on the west bank of the river to-night or early to-morrow, if Red does not forestall him, in order to do which and to perform the task set him he must push on to GLOSTER at once.

(b) and (c)—*Brief statement of the action Colonel A proposes to take and his orders to give effect thereto.*

The troops halt for half an hour at DAREHAM, during which time Colonel A gets the report and telegram, and issues verbally the following orders. He first sends a telegraphic report of what has happened to ABINGDON, with a brief statement of proposed action and despatches his Mounted Infantry Commander back to the front at once with directions to hold his present line, at all costs, until relieved.

Operation Orders by Colonel A, Comdg. Red Advanced Force.

No. 2.

DAREHAM:

10-10-05.

The enemy's Cavalry in small numbers was met by our Mounted Infantry near GLOSTER this afternoon, and driven back across the ITCHEN; the crossings are held by the enemy.

The 1st Division of our Army will be at DAREHAM to-morrow, 11th instant. Our Mounted Infantry are watching the line of the ITCHEN.

2.—The Advanced Guard troops will continue the duty of observation and protection on their present line until relieved.

The main body will halt to-night at GLOSTER, where the troops will occupy "alarm quarters."

The 9th Rifles will break off from the column at FARBY X ROADS and march to HEEGAN'S FARM.

The O. C., 4th L. I., will relieve with one Company the Company 9th Rifles on Rear Guard duty.

3.—The Baggage and Ammunition Columns will close up on the 4th L. I. and follow them to GLOSTER.

4.—The O. C. Force proceeds to GLOSTER, where Headquarters will be established at the RED LION HOTEL.

5.—Outpost orders will be issued at GLOSTER on the arrival of the troops.

Dictated to Adjutant, 4th L. I.

" " 9th Rifles.

X. Y. Z., MAJOR,
Staff Officer.

Orderly Officer, R. F. A.

" " R. A. M. C.

One copy to O. C. M. I.

" " O. C. S. and T. C.

" " C. S. O., Red Army.

Issued at 6-30 P.M.

Colonel A sees the troops start about 6-40 P.M., and then, accompanied by his Staff Officer and the Quartermasters, hurries on to GLOSTER (4 miles), which he reaches about 7-15 P.M. During his ride he decides on future action. Fortunately he knows every inch of the ground.

The troops marching to GLOSTER, viz., 6 Companies 4th L. I.—(2 Companies are with the Advanced Guard)—the Field Battery and the Baggage should be in by 8-30 P.M. at the latest. The 9th Rifles reach HEEGAN'S FARM about the same hour. In the meanwhile the following orders are drafted and are issued on the arrival of the troops.

Operation Orders by Colonel A, Commanding Red Force.

No. 3.

GLOSTER,

10-10-05.

Nothing further has transpired regarding the enemy.

2.—The Line of Outposts for the night will be KNOCKDOWN X ROADS—HEATH HILL—HANDY BRIDGE, which in case of attack will be the Line of Resistance.

Right Section—Major V., 4th L. I., Commanding; 2 Companies 4th L. I. and $\frac{1}{2}$ Company Mounted Infantry; from KNOCKDOWN X ROADS to KLIMO FORD road, both inclusive.

*

*

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*

Left Section—Major S., 9th Rifles, Commanding; 2 Companies 9th Rifles and 1 Section Mounted Infantry; from KLIMO FORD road exclusive, to the ARLOW branch G. W. R. inclusive. A Mounted Infantry Standing Patrol will be posted at JARFIELD CHURCH.

3.—The remainder of the troops will occupy "alarm quarters."

(a) The Mounted Infantry and Pompoms at HOME HOUSE;

(b) Artillery and 4th L. I. at GLOSTER;

(c) 9th Rifles at HEEGAN'S FARM. The O. C. 9th Rifles will take measures to secure HANDY and GRAND bridges.

4.—Central Signalling Station, GLOSTER CHURCH.

5.—An Examining Post will be furnished by the Right Section Outposts on the KARVAN BRIDGE—GLOSTER road.

6.—Fires and cooking are permitted at the Outposts.

7.—The Field Hospital is at the CORN EXCHANGE, GLOSTER.

8.—The O. C. Mounted Infantry will detail three Orderlies each for O. C.'s 4th L. I. and 9th Rifles.

The Mounted Infantry will resume their day positions by 5 A.M.

9.—The trains will march to-morrow at 5 A.M.

2nd Line Transport and Supply Column to DAREHAM, escorted by 1 Section Mounted Infantry;

Ammunition Column, and Field Hospital escorted by 1 N.-C.O. and 12 men M. I., to HEEGAN'S FARM and HANGER LODGE respectively.

10. * * * *

11.—Commanding Officers will meet the O. C. Force at HAMVILLE X ROADS at 5 A.M. to-morrow.

Dictated to Adjutant, 4th L. I.

9th Rifles.

X. Y. Z., MAJOR,

Orderly Officer, R. A.

Staff Officer.

" " R. A. M. C.

" " Mounted Infantry.

" " S. and T. C.

One copy to O. C. Companies, 4th L. I. on Advanced Guard.

" " " C. S. O. Red Army.

Issued at 8-35 P.M.

2ND EXERCISE.—(a). *Blue Staff Officer's Appreciation of the Situation at 6 p. m., 10th October.*

(The Staff Officer may be supposed to have accompanied the Blue Cavalry to-day on its reconnaissance. He noted the dust raised, probably by marching troops, west of BOSTON COVERT from the TOWER on TOWER HILL, and was present, when Blue Cavalry retired before Red M. I. to the ITCHEN).

Blue Advanced Guard has reached the ITCHEN and holds the crossings. It is strong in Infantry and Artillery in proportion to Cavalry, and there is no Independent Cavalry. Blue Main Body, consisting of two Divisions, is at OXTON HOUSE, barely $3\frac{1}{2}$ miles in rear. Blue's object is to prevent Red assembling south of the GRAND RIVER for which purpose their march is at present directed on BOFIELD junction. The possession of the ARLOW branch G. W.R. is necessarily of great importance. Blue's advance has been fairly rapid and unexpected, and the Main Body is already within an easy day's march of its immediate objective. Any question as to a fight for the ITCHEN crossing has been settled by Blue's occupation of them.

Blue is aware that Red is collecting to oppose him, and to-day's reconnaissance has actually brought the two into touch. Blue's advance has probably been unexpected by Red, but no doubt news of it has reached him in the course of the day. Blue's Cavalry has ascertained that no large hostile force was between the **ITCHEN** and **BOFIELD** up to about 5 P.M., but that a force was to-day on the march towards the latter place. From the numbers of Cavalry displayed and the dust seen, which was probably raised by Infantry and guns, the force encountered, seems likely to have been a Brigade of all arms, possibly the Advance Guard of a Division or two, marching from **ABINGDON**. If this supposition is correct, Blue is opposed by a force about equal strength with his own, but stronger in Cavalry.

Blue has learnt from his outposts that Red's outposts are now in occupation of the hills west of the **ITCHEN** in his front, so that it is almost certain that the force which was met to-day continued its march to the line taken up its Cavalry, after the latter had driven Blue's cavalry back to the river. There can be little doubt that Red will dispute Blue's further progress.

* * * *

From **JEWTOWN** the Railway runs through a series of deep cuttings (the deepest of which is through **HANDY HILL**), and it is crossed by a number of bridges.

Four roads converge from the east upon **DAREHAM** :—

(1) **PUBBI—JEWTOWN—DAREHAM**, parallel with the Railway and crossing the **ITCHEN** at **JEWTOWN**; a good metalled road;

(2) **PUBBI—MORESBY X ROADS—KLIMO FORD** bridge—**GLOSTER**; a narrow country lane, bad surface.

* * * *

From **LITTLETON** the fourth road mentioned passes through a tangle of hills south of the **GLOSTER** Ridge. By this route the enemy's right, if he stands on the defensive in his present position, might be turned from the south. But the effect would be to throw him back on his nearest communications with **ABINGDON**, and might expose Blue's flank to an attack from the direction of **DAREHAM**. On the other hand, a determined advance by **JEWTOWN—HANDY HILL**, along the Railway, promises good results, as this would tend to cut Red off from **ABINGDON**, whence he appeared to be marching to-day, and from which place several routes diverge on to the Railway, and over it by the bridges at the cuttings. For similar reasons the enemy will in all likelihood also concentrate on this flank.

No hostile movements of any kind were observed north of the Railway westwards as far as **DANGER** and **CURRY HILLS**.

(b). *Report sent O. C. Blue Force by Blue Advance Guard Commander.*

FROM

Brig.-General B——, Commanding 1st Brigade,

TO

C. S. O., Blue Army.

KARVAN HOUSE:

10-10-05,

9 p.m.

SIR,

The Advance Guard arrived on the ITCHEN at 6 P.M. today.

2.—The Cavalry Squadron reconnoitred towards DAREHAM, DEATHRIDE HOUSE, and FARTOWN. At 4-15 P.M. they came into contact with Red Cavalry in superior force near DAREHAM, and were driven back to the ITCHEN, where they held the line JARFIELD CHURCH—HOWES HOTEL—KNOCKDOWN X ROADS until relieved by Infantry.

3.—The Outpost Line now established is from JEWTON STATION along the river to LITTLETON. Cavalry standing patrols are at JARFIELD CHURCH, Farm $\frac{1}{2}$ mile west of KLIMO FORD, and HOWES HOTEL, and the roads from LITTLETON are patrolled. The remainder of the Brigade is encamped at LOOSEBURN X ROADS, with the exception of the 1st Battalion, which is at JOKO FARM. I enclose a rough sketch of my Outpost Line.

4.—The high ground about GLOSTER and HANDY HILL is occupied by Red Outposts, Infantry and Cavalry. Their line runs from KNOCKDOWN X ROADS to the Railway near HANDY BRIDGE.

5.—I forward a memorandum by Major F, Brigade-Major, 1st Brigade, who accompanied the Cavalry in their reconnaissance. With his deductions I entirely agree. As night fell before the Red Infantry of this advanced force reached DAREHAM, it is improbable that the Red Main Body is nearer to-night than at that place or BOFIELD.

6.—I propose to-morrow to start at daybreak and to clear the enemy off the hills west of the river.

I have, &c.,

J. H. B.,—BRIG.-GENL.,

Commanding 1st Brigade.

3RD EXERCISE.—*Advanced Guard Orders for the 11th October.*

(Blue Advanced Guard Commander will have informed his troops of the Cavalry skirmish of that afternoon in Outpost orders, briefly stating that the Advanced Guard Cavalry had reconnoitred to within a mile of DAREHAM, and that a Red force was on the high ground west of the river; also where Blue Main Body was halted for the night; and that the crossings were in Blue's possession. He will have named the hour—5 A. M.—at which the Cavalry are to resume their day

B-1

positions and patrol work. He has ordered his C. O.s to meet him at KEEN HOUSE at 5 A.M. Advanced Guard orders therefore do not mention any of these points).

*Operation Orders by Brigadier-General B—, Commanding
1st Brigade.*

No. 6.

KARVAN HOUSE:

11-10-05.

No further information has been obtained regarding the enemy. The Blue Army Corps will advance to-morrow to the line DAREHAM—CLOONEY X ROADS in the same order as to-day, the 1st Brigade acting as Advance Guard.

2.—The 1st Brigade will cross the ITCHEN by the NEW-TOWN and the KARVAN bridges, and will first clear the position HANDY BRIDGE—GLOSTER of the enemy.

3.—The Advanced Guard Cavalry, 1st Squadron 2nd Dragoons, Major P Commanding, will start at 6 A.M.

The O. C. Squadron, 2nd Dragoons, will detail three orderlies each to G. O. C. 1st Brigade, and to O. C.'s 1st and 4th Battalions.

4.—The Field Batteries will come into action—
7th Field Battery at KEEN HOUSE, 8th Field Battery south of the KARVAN ROAD, 600 yards south of KARVAN HOUSE, and will remain in action until the Infantry are over the river ITCHEN.

5.—(a) The 4th Battalion (less 1 Company) will leave LOOSE-BURN X ROADS at 5-40 A.M. and advance on GLOSTER by KARVAN BRIDGE.

(b) The 1st and 2nd Battalions will advance from JEW-TOWN at 6 A.M. and move on HANDY HILL—HEEGAN'S FARM; Commander Lieutenant-Colonel Z, 1st Battalion.

6.—The 3rd Battalion (less 1 Company) will be formed up at KEEN HOUSE at 6 A.M. under the immediate orders of the G. O. C. Brigade.

7.—The Ammunition Column and the Field Hospital, in the order named, under escort of 1 Company, 4th Battalion, will follow the 4th Battalion to GLOSTER at one hour's interval.

The 2nd Line Transport and Supply Train under escort of 1 Company, 3rd Battalion, will remain parked, until the arrival of the Divisional Baggage, which they will join.

8.—The G. O. C. 1st Brigade will be at KEEN HOUSE at 6 A.M.

Dictated to Adjutant, 1st Battalion.

" " 2nd Battalion.

" " 3rd Battalion.

" " 4th Battalion.

Orderly Officer, R. F. A.

" " 1/2nd Dragoons.

" " R. A. M. C.

F. H. F., MAJOR,
Brigade-Major.

One copy to O. C. S. and T. C.
 „ „ O. C. Right Section Outposts.
 „ „ O. C. Left Section Outposts.
 „ „ O. C. Centre Section Outposts.
 „ „ C. S. O. Blue Army.
 Issued at 5-25. A. M.

4TH EXERCISE.

On the morning of the 11th October the Cavalry have scarcely begun their advance before they are fired at by Red M. I. from the neighbourhood of HORSE HILL and HOME HOUSE. A pompom also opens from JARFIELD HOUSE on the Blue Infantry moving on JEW TOWN from JOKO.

Blue's Battery at KEEN HOUSE at once opens fire in the direction of JARFIELD, while the 1st Battalion breaks cover from JEW TOWN. The 8th Field Battery south of KARVAN HOUSE follows the example of the 7th, until it becomes necessary for it to turn its fire towards GLOSTER in support of the 4th Battalion in its movement on the town.

The first gun is fired soon after 6 A.M. The 2nd Battalion makes for JEW TOWN in support of the 1st Battalion. Blue Advanced Guard Commander can do nothing now until the situation develops. Red and Blue have met at JEW TOWN, and west of KARVAN BRIDGE. If the 1st and 2nd Battalions succeed in throwing Red on the defensive and are gaining ground, Blue Advanced Guard Commander will keep the 3rd Battalion in leash a bit longer. If Red's rush on JEW TOWN bids fair to succeed, Blue will send the 3rd Battalion across KLIMO BRIDGE on to their flank. He will let the 4th Battalion go on towards GLOSTER.

If the Red G. O. C. despatches reinforcements by the DALESTON Road by 5 A.M. they could reach HANDY BRIDGE in three hours, 8 A.M., while Cavalry could get down to JEW TOWN by FARTOWN in an hour less. By 9 A.M. a whole Red Division might be approaching HEEGAN'S. On the other hand Blue has two Divisions, the head of which will be approaching the ITCHEN at about 8 A.M.

V.B.—On the recommendation of the Adjudicating Officer certain superfluous or unnecessary portions of this solution have been omitted. The omissions are marked * * * * *

5.—Outpost orders will be issued at GLOSTER on the arrival of the troops.

Dictated to Adjutant 4th L. I.

" " 9th Rifles.

X. Y. Z., MAJOR
Staff Officer.

Orderly Officer, R. F. A.

" " R. A. M. C.

One copy to O. C. M. I.

" " O. C. S. and T. C.

" " C. S. O., Red Army.

Issued at 6-30 P.M.

Colonel A. sees the troops start about 6-40 P.M., and, then accompanied by his Staff Officer and the Quartermasters, hurries on to GLOSTER (4 miles), which he reaches about 7-15 P.M. During his ride he decides on future action. Fortunately, he knows every inch of the ground.

The troops marching to GLOSTER, viz., 6 Companies 4th L. I. (2 Companies are with the Advanced Guard), the Field Battery and the Baggage, should be in by 8-30 P.M. at the latest. The 9th Rifles reach HEEGAN'S FARM about the same hour. In the mean while the following orders are dictated and are issued on the arrival of the troops.

Operation Orders by Colonel A., Commanding Red Force.

No. 3.

GLOSTER.

10-10-05.

Nothing further has transpired regarding the enemy.

2. The Line of Outposts for the night will be KNOCK DOWN X ROADS—HEATH HILL—HANDY BRIDGE and in case of attack will be the Line of Resistance.

Right Section—Major V., 4th L. I. Commanding, 2 Companies 4th L. I. and 1 Company Mounted Infantry, from KNOCK DOWN X ROADS to KLIMO FORD road, both inclusive.

Left Section—Major S., 9th Rifles Commanding, 2 Companies 9th Rifles and 1 Section Mounted Infantry, from KLIMO FORD road exclusive to the ARLOW branch G. W. R. inclusive. A Mounted Infantry Standing Patrol will be posted at JARFIELD CHURCH.

3. The remainder of the troops will occupy various positions.

(a) The Mounted Infantry and Pioneers at HOME HOUSE.

(b) Artillery and 4th L. I. at GLOSTER.

(c) 9th Rifles at HEEGAN'S FARM. The O. C. 9th Rifles will take measures to secure HANDY and GRAND bridges.

4. General Staffing Station, GLOSTER CHURCH.

5. An Evening Post will be carried out by the Right Section Outposts on the KARAN BRIDGE—GLOSTER road.

6.—Fires and cooking are permitted at the Outposts.

7.—The Field Hospital is at the CORN EXCHANGE, GLOSTER.

8.—The O. C. Mounted Infantry will detail three Orderlies each for O. C.'s 4th L. I. and 9th Rifles.

The Mounted Infantry will resume their day positions by 5 A.M.

9.—The trains will march to-morrow at 5 A.M.

2nd Line Transport and Supply Column to DAREHAM, escorted by 1 Section Mounted Infantry;

Ammunition Column, and Field Hospital escorted by 1 N.-C.O. and 12 men M. I., to HEEGAN'S FARM and HANGER LODGE respectively.

10. * * * *

11.—Commanding Officers will meet the O. C. Force at HAMVILLE X ROADS at 5 A.M. to-morrow.

Dictated to Adjutant, 4th L. I.

9th Rifles.

X. Y. Z., MAJOR,
Staff Officer.

Orderly Officer, R. A.

" " R. A. M. C.

" " Mounted Infantry.

" " S. and T. C.

One copy to O. C. Companies, 4th L. I. on Advanced Guard.

" " C. S. O. Red Army.

Issued at 8-35 P.M.

2ND EXERCISE.—(a). *Blue Staff Officer's Appreciation of the Situation at 6 p. m., 10th October.*

(The Staff Officer may be supposed to have accompanied the Blue Cavalry to-day on its reconnaissance. He noted the dust raised, probably by marching troops, west of BOSTON COVERT from the TOWER on TOWER HILL, and was present, when Blue Cavalry retired before Red M. I. to the ITCHEN).

Blue Advanced Guard has reached the ITCHEN and holds the crossings. It is strong in Infantry and Artillery in proportion to Cavalry, and there is no Independent Cavalry. Blue Main Body, consisting of two Divisions, is at OXTON HOUSE, barely $3\frac{1}{2}$ miles in rear. Blue's object is to prevent Red assembling south of the GRAND RIVER for which purpose their march is at present directed on BOFIELD junction. The possession of the ARLOW branch G. W.R. is necessarily of great importance. Blue's advance has been fairly rapid and unexpected, and the Main Body is already within an easy day's march of its immediate objective. Any question as to a fight for the ITCHEN crossing has been settled by Blue's occupation of them.

TACTICAL SCHEME COMPETITION, APRIL 1906.

References are to a map which will be supplied on demand.

A red force is advancing eastwards from ABUSIR towards WORTH. You are in command of the Red
1 Regiment Cavalry. Advanced Guard, strength as per margin.
4 Companies M. I. On the evening of the 31st March you
1 Brigade R. F. A. bivouacked in the vicinity of ABBEVILLE.
1 Brigade Infantry.

Next morning at 4 A.M. you receive the following telegram:—

To O. C. Advanced Guard, ABBEVILLE. From C. S. O. Red force, ABUSIR, 31st March, 3-30 A.M.

Spies report that a blue force estimated at an infantry division with 1 regiment cavalry is at WORTH. Stop. We march to GLOSTER to-day. Stop. Advance *viâ* DAREHAM and GLOSTER and secure the passages of the ITCHEN.

Advancing in accordance with the above orders you meet hostile cavalry patrols, on the line DOWNS HOUSE—DOON TOWN, which retire before you. On passing the eastern end of GLOSTER your vanguard cavalry comes under artillery fire from the east of the ITCHEN. Friendly inhabitants inform you that the bridges over the ITCHEN were intact this morning and that a small force of one battery, some cavalry, and some infantry has just arrived on the east bank of the River ITCHEN from the direction of WORTH.

REQUIRED—As Staff Officer to the G. O. C. you will write,—

- (1) An appreciation of the situation (for his use).
- (2) The orders which would be issued.

Intending competitors should forward their names to the Secretary of the Institution with the sum of Re. 1, when they will receive a copy of the map to which the Scheme relates, together with all instructions.

This competition will close on the 1st September 1906. Solutions received after that date will be treated as late for adjudication.

THE JOURNAL

OF THE

United Service Institution of India

July 1906

No. 164.

The Council of the United Service Institution of India having received several communications on the subject of an article which appeared in the April number of the Journal and having given them all due consideration are of opinion, that the article in question did not contravene Rule 2 of the "Rules for contributions."

They consider, however, that some portions of the discussion might have been conducted in a less strenuous spirit.

The youthful Napoleon and the youthful Hannibal, their history and extracted some useful lessons therefrom. These lessons they profited by on the field of battle. In the following pages I propose to briefly refresh our memories regarding the achievements of one of the greatest soldiers the world has ever seen, a man who had to contend with difficulties which would have exhausted the energy of any but an exceptionally resolute man, a man who successfully contended with and overcame these difficulties during 18 long years of war, a man who could fight as well as think; let us see whether he has not something to teach us of war and possibly too of the formation of those qualities which the man who would serve his country must possess whether he lives in 200 B.C. or 1900 A.D.

It will first be necessary to narrate briefly the circumstances, both military and political, under which Hannibal waged war, and then to enter into some detail regarding actions fought and marches performed and the general principles guiding the operations.

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TACTICAL SCHEME COMPETITION, APRIL 1906.

References are to a map which will be supplied on demand.

A red force is advancing eastwards from ABUSIR towards WORTH. You are in command of the Red Advanced Guard, strength as per margin.

1 Regiment Cavalry.
4 Companies M. I.
1 Brigade R. F. A.
1 Brigade Infantry.

On the evening of the 31st March you bivouacked in the vicinity of ARREVILLE.

- (1) An appreciation of the situation (for his use).
- (2) The orders which would be issued.

Intending competitors should forward their names to the Secretary of the Institution with the sum of Re. 1, when they will receive a copy of the map to which the Scheme relates, together with all instructions.

This competition will close on the 1st September 1906. Solutions received after that date will be treated as late for adjudication.

THE JOURNAL

OF THE

United Service Institution of India

Vol. XXXVI.

July 1906.

No. 164.

HANNIBAL.

BY BT. MAJOR A. H. BRIDGES, *p.s.c.*, 116th Mahrattas.

The readers of this Journal are, I feel sure, interested in military history whether they have or have not examinations to pass. The value of the study of past campaigns is now acknowledged by all soldiers not only from the point of view of interest, but also as a necessary means to an end, the end being actual modern war. As a rule, the study of military history is confined to the campaigns fought by Napoleon and Wellington and those in the course of the last 100 years. Do we not rather confine our field of study by limiting our historical survey to so short a period?

The youthful Napoleon and the youthful Wellington also studied history and extracted some useful lessons therefrom. These lessons they profited by on the field of battle. In the following pages I propose to briefly refresh our memories regarding the achievements of one of the greatest soldiers the world has ever seen, a man who had to contend with difficulties which would have exhausted the energy of any but an exceptionally resolute man, a man who successfully contended with and overcame these difficulties during 18 long years of war, a man who could fight as well as think; let us see whether he has not something to teach us of war and possibly too of the formation of those qualities which the man who would serve his country must possess whether he lives in 200 B.C. or 1900 A.D.

It will first be necessary to narrate briefly the circumstances, both military and political, under which Hannibal waged war, and then to enter into some detail regarding actions fought and marches performed and the general principles guiding the operations.

Before proceeding to these matters, however, I should like to say, for the information of those who have not yet had the time or opportunity to study these campaigns, that our knowledge of them is derived from history, not from legends. The historians Livy and Polybius are the best authorities ; the former's history covers the whole period of the Second Punic War and the latter is complete only down to the battle of Cannae, B.C. 216. Polybius was a Greek and a soldier though in the Roman service ; he lived and wrote a generation after Hannibal and got his information from men who went through the campaigns in Italy. Other ancient writers are referred to in modern literature on the subject, but practically the two above mentioned are the source from which all students draw their information.

Little attention appears to have been paid by English writers to the campaigns of Hannibal, and most of the modern works at the British Museum Library and in the Greek and Roman Department there are by German and French scholars. There are, however, good studies of Hannibal by Colonel Dodge of the U. S. Army and by William O'Connor Morris, also a small book on the same subject written in 1858 by a Colonel MacDougall. Works on Roman history also supply much information about these campaigns, especially those of Mommsen, Arnold and Bosworth Smith.

Hannibal was born B. C. 248. He came of a fighting race, his father Hamilcar having been the Carthaginian Commander in the latter period of the First Punic War. This war between Rome and Carthage lasted from 264 to 241 (23 years), and ended in the complete victory of the Romans. It originated in the fact that Carthage possessed Sicily and Rome was jealous.

The chief point of interest in this First Punic War is the extraordinary persistency with which the Romans built fleet after fleet until at last they succeeded in beating the Carthaginian fleet, till then supreme. Having obtained command of the sea they soon obtained the command on land.

After this Hamilcar planned to conquer Spain to replace Sicily.

Carthage like England lived on commerce, she must either expand or decline, she could not stand still. It was recognised by the party in power at Carthage that Rome was their great and only rival, that submission to Rome meant the extinction of national growth. This party in power was led by Hamilcar, whose family name was Barca. The opposition was led by a man named Hanno who represented the peace party ; we shall see how during the whole of the Second Punic War this opposition acted as a drag to Hannibal's operations. Hamilcar carried the Government with him and obtained permission from the Senate to undertake the conquest of Spain.

In B. C. 236 he set out with his army and his son Hannibal (then 12 years old) along the northern shore of Africa to the Pillars of Hercules and thence crossed over to Spain. He could not sail direct from Carthage, for, since her final defeat five years before, Carthage had been unable and afraid to build another fleet for fear of offending Rome. During the following eight years Hannibal accompanied his father during a series of successful operations which ended in the subjugation of the greater part of the southern portion of the Peninsula.

Hamilcar was killed in battle in B. C. 228 and his son-in-law Hasdrubal, surnamed the Handsome, was elected by the army to the command. At this time the strength of the Carthaginian army in Spain was 60,000 foot, 8,000 horse, and 200 elephants. Most of the infantry and some of the cavalry were Iberians, men enlisted in Spain. Hasdrubal continued the policy of Hamilcar and conquered the country as far north as the Ebro. It was only the great success of the Barca family in Spain which kept the Hanno faction in Carthage from interfering, and as it was, great difficulty was experienced in obtaining reinforcements and supplies from Carthage, in fact the army in Spain gradually became almost independent and self-supporting.

About four or five years later an opportunity occurred for Rome to plant her banners in Spain. The town of Saguntum, near the modern Valencia, was inhabited by a Greek colony. They viewed with alarm the growth of Carthaginian influence and invited Rome to protect them. Rome was only too glad to do so, and this act finally brought about the Second Punic War.

From the time of his infancy Hannibal had been brought up to hate the Romans. Dr. Arnold in his history of Rome graphically describes the ceremony performed at Carthage before Hamilcar marched for Spain. After offering a solemn sacrifice and finding the omens favourable, Hamilcar called his son Hannibal, then a mere lad, and asked him if he would like to go to war. He jumped at the offer, and laying his hand on the sacrifice he swore that "he would never be the friend of the Romans." As regards his education not much is known. He probably knew all that the Greeks had to teach about war and art, and the details of the First Punic War must have been familiar to him. After his father's death in 228 he went back to Carthage and continued his education, but in 224 he returned to Spain at Hasdrubal's request and there acted as Commander of Cavalry.

In B. C. 221 Hasdrubal was assassinated and the army elected Hannibal, then 27 years old, to succeed him. The home Government confirmed the election. Livy who, as a Roman, does not attempt to disguise his hatred of Hannibal describes him at this period as an exceptionally gifted soldier, "he knew not fear or fatigue, he was indifferent to heat and cold and the claims of sleep, his clothing in no wise distinguished him from his fellows, his weapons and horses attracted every one's eye," &c.

The guiding principle in the minds of the Barca family appears to have been war with Rome. Hamilcar originated the idea as far as we know, and Hasdrubal kept it in view, but it was Hannibal who formed it into definite shape, who worked out the details and finally carried it out.

He had first to organise his army, and this meant the conquest and settlement of territory in which he carried on his recruiting, he had to collect supplies and transport for them, equip his men and instruct them. He could depend on Carthage for nothing. His march was to lead through the Pyrenees and the Alps, over the Rhone and other large rivers, into the country of the Gauls about whose friendliness or hostility he could make no certain forecast, and at the end of all this he must arrive in a condition fit to meet and defeat the mighty Roman nation.

The years 221 and 220 he spent in consolidating his Spanish possessions, and amongst other captures he took the town of Salmantica, the modern Salamanca. The devotion of his men, whether Carthaginians, Liby-Phoenicians Spaniards, Gauls or Numidians was extraordinary. He was certainly liberal to them as regards booty, but later in his life, when fortune appeared to be entirely against him and little booty was to be had, he retained his power over them. The following extract from the work by Colonel Dodge, referred to previously, shows the opinion formed by that officer after a close study of the campaigns of Alexander and Hannibal; after describing a battle fought on the Tagus against the barbarians of Spain, he says:—"The entire operation reads like one of Alexander's battles in Asia, and shows that in dealing with similar enemies Hannibal possessed the same tremendous force. It was when pitted against the three-quarters of a million of men which Rome could muster that Hannibal was called on to exercise caution and self-control—virtues Alexander never possessed."

The year B. C. 219 was marked by the siege of Saguntum by Hannibal. This town was under Roman protection as stated above. He was ready for war with Rome and wanted only an excuse. Under the pretence that the Saguntines were attacking a tribe under Carthaginian protection, he began the siege of their city. Rome contented herself with remonstrances through embassies sent to Hannibal and to Carthage. Livy says that Hannibal had 150,000 men under his orders to carry on this siege, but whatever the number it took them eight months of hard fighting and hard work to effect its capture, and then they found little more than corpses and ruins, for many of the inhabitants burnt their treasure and themselves in their own houses. During this siege Hannibal employed device after device to meet and overcome the obstinate resistance offered by the Saguntines, but the formal siege of a town did not furnish him with opportunities for displaying the art of war as exemplified by him in subsequent years.

Rome was not able to ignore the fall of Saguntum and declared war against Carthage. Thus began the **War declared B. C. 219.** Second Punic War which was to determine whether the dominion of the world was to belong to the Indo-Germanic or to the Semitic family of nations. In May B. C. 218 Hannibal set out from Cartagena with his army of invasion. He did not start on his great march without forethought. Owing to the superiority of the Romans on the sea he made what arrangements he could for a base for his army in Cisalpine Gaul, that is, the country drained by the R. Po. Two years previously he had sent what may be called "Reconnoitring Embassies" amongst the Gauls inhabiting this territory, and through them he received assurances from many of the tribes promising their help against their enemies the Romans. Amongst others the Insubres and Boii promised to supply guides through the Alps, to obtain the help of the Transalpine Gauls (*i.e.*, those to the north of the Alps) during the passage, and to collect abundant supplies for the army on its arrival on the river Po. He also hoped for help from Macedon, then at enmity with Rome. In addition to these arrangements with the Gauls Hannibal had to provide beforehand for the safety of Carthage itself, Spain and other Carthaginian possessions in West Africa. Spanish troops were sent to West Africa, and West African troops were sent to Carthage. African troops were brought to Spain. The army and the Colonies in the latter country were put under the command of Hasdrubal (his brother) whose army numbered 15,000 men; he had also a fleet of 50 quinquiremes. Hannibal sent a small fleet of 20 quinquiremes with 1,000 men on board to pillage along the west coast of Italy, and 25 were despatched to endeavour to surprise and capture Lilybaeum in Sicily. The Carthaginian fleet being so inferior to that of Rome, Hannibal would not concentrate and risk a naval battle, but he adopted the plan of raiding to mislead his enemy and cause him to disperse his force. The result was that Rome sent her smallest army to Cisalpine Gaul to oppose him. It is probable that Rome never believed it possible that Hannibal would attack from the north, at least she must have thought so until Hannibal's army had crossed the Rhone.

But to return to his operations. In July he reached the River Ebro which he crossed in three columns. **Arrival on the River Ebro.** North of the Ebro lies Catalonia over which the Romans pretended to exercise some sway. This province had therefore to be pacified and garrisoned. The three columns traversed the country from south to north and reunited north of the Pyrenees at a place called Illiberis (near the modern Perpignan). They arrived here in September having subdued the whole of Catalonia, but with a loss of 13,000 men. A force of 10,000 foot and 1,000 horse was left as a garrison with its headquarters at Barcino (Barcelona). Some of the Spanish regiments apparently began to show signs of disaffection at this time, and it is said that 3,000 deserted. Hannibal found it expedient to send back 8,000 of them.

These deductions brought his force down from about 90,000 to 60,000 with whom he continued his advance to the Rhone. Here he arrived at the end of September at a point a little north of Avignon. He immediately began his plans for crossing. The tribes on the western bank he conciliated and bought boats and canoes from them. Those on the eastern bank were hostile and had collected to oppose him. The manner of Hannibal's crossing of the Rhone has been compared to Alexander's crossing of the Hydaspes, and, we may add, the Japanese crossing of the Yalu. A flanking detachment was sent 25 miles up the river where they crossed in canoes and on rafts and returned down the opposite bank on to the flank of the barbarians. Meanwhile Hannibal maintained a great show of strength and preparations for crossing. The fourth day after the banking detachment started a huge bonfire (the pre-arranged signal) indicated their presence on the flank of the enemy and Hannibal's floats pushed out. The barbarians swarmed on the shore, suddenly their camp was set on fire and they were attacked in flank and rear, confusion ensued and the passage was won.

But while Hannibal was marching towards the Rhone, Publius Scipio, the Consul, not knowing that the Pyrenees had already been crossed, set sail from Genoa with an army of 22,000 foot and 2,000 horse, intending to land in Spain. On his way he touched at Massilia (the modern Marseilles) and there heard of Hannibal's march, but he did not find out the exact position of the Carthaginian army until he had sent a party of 300 cavalry up the Rhone. These met 500 Numidians, and defeating them, pursued them to the Carthaginian camp at this moment on both sides of the river, for the elephants were not yet across. The Roman cavalry reported this to Scipio who marched up the river hoping to reach Hannibal before his whole army was across. He was too late, the rear guard had already left three days, marching north. Hannibal had got his elephants over successfully on huge rafts covered with earth. He immediately pressed forward, and moving up the Rhone to where the Isere joins it, he turned east moving up this latter river to the Alps. Scipio meanwhile turned back, re-embarked his army and sent most of it under Cneius Scipio, his brother, on an expedition against the Carthaginians in Spain and returned himself to Genoa hoping to arrive on the River Po and to collect a sufficiently large army there to successfully oppose Hannibal on his arrival in Italy should he ever arrive at all. Scipio has been criticised for not making a greater effort to bring Hannibal to battle. He had 24,000 men to Hannibal's 60,000. The latter undoubtedly avoided him, for a general action would have been inconvenient at that time with the Alps still in front, the Rhone behind and hostile or doubtful tribes all round. As far as we know, Scipio *could not* have met Hannibal. He and his Government were surprised. The crossing of the Pyrenees and then the Rhone took them unawares. The Roman cavalry reached the

Carthaginian camp, but it was not possible for their infantry to do so in time to bring on a battle if Hannibal did not wish it.

On arriving on the Isere Hannibal found two brothers contending for a kingdom. They were probably of the Allobroges tribe, and Hannibal joining with the elder, Brancus, restored him to his throne and in return received much assistance in supplies and protection from hostile tribes as far as the Alps. The particular pass by which Hannibal crossed the Alps has been much debated by writers, including Napoleon, but that generally accepted at the present time is the Little St. Bernard. It is not of any importance for the purposes of this paper and it is sufficient to say that the marches, the time taken and the topography described by Polybius agree in nearly every particular with a march *via* the Mont du Chat and the Little St Bernard.

At the Mont du Chat Hannibal was opposed by the local Gauls. These warriors only occupied the pass by day apparently thinking that it was impossible to fight by night. Hannibal one evening kept his camp fires burning as usual, marched out with his light troops after dark and occupied the top of the pass. Next morning when the Gauls appeared there was a fight with the ground entirely favourable to the Carthaginians. The army passed through the mountain and down into the valley beyond where they surprised and took the town of their opponent (the modern Chambery) and found three days' supplies and many horses and captives. The route now followed the Isere up to a place called Seez; here the real defile began

In the Alps.

and at the same time the barbarians of this valley who had at first appeared to be friendly made a sudden attack. In the defile there appears to have been what Polybius describes as "a certain white rock, strong from its position." On this Hannibal took up a position with part of his army and checked the barbarians, while his cavalry, elephants and baggage got through the defile during the night. Next morning he made his way after them. This white rock, 300 feet high, exists still, though it is being mined for the gypsum of which it is composed, to make plaster of Paris. Its existence is one of the links in the chain of evidence brought to prove that this was really the route followed by Hannibal. The next day he moved to the head of his army and reached the top of the pass, this was on the ninth day after passing the Mont du Chat. Here he halted two days to let his stragglers come in. Many baggage animals also came in, but without loads. He had taken eight marching days from the Mont du Chat to the top of the Little St. Bernard, a distance of 80 miles. Considering the nature of the tracks and the fighting this gives a very reasonable average per diem. Snow was lying on the pass and the men had suffered great hardships. In the fighting on the Mont du Chat and at the White Rock the losses had been heavy. Hannibal therefore addressed his men and encouraged them with the prospect of meeting friendly Gauls at the foot of the Alps, and of soon reaching a warm and fertile land. These addresses are referred to on

several occasions and probably took the place of the modern "general order" or "message from the King."

On the 11th day he started down the southern slopes which are steeper and more rugged than the northern.

In Italy.

He had great difficulty in passing places where avalanches had carried the track away, in fact he spent one whole day in making a road fit for horses and mules to pass an obstruction, and it required three more days' work to get the elephants by. Meanwhile the horses and mules moved on and three days later, *i.e.*, the 15th day after entering the mountains at Mont du Chat, they emerged on to the plain at the modern Ivrea. The elephants followed a few days later.

It was now five months since Hannibal left Cartagena. He then had 92,000 foot and horse. He crossed

Numbers.

the Rhone with 46,000, of whom 8,000 were horse. He now had 26,000 only, of whom 6,000 were horse. And these were so exhausted that, as Polybius says, "they were both in appearance and condition brought to a state more resembling that of wild beasts than human beings." We are not told how many of the transport animals survived, nor are we told how the army was fed during its march in the Alps. The first thing to do was to rest his men and this Hannibal was able to do in the territory of the Insubres his Gallic allies. Shortly afterwards, when the men were somewhat recovered from their fatigues, a move was made against the Taurini, then at war with the Insubres.

Their chief city Turin was taken after an attack lasting three days, and there was apparently a pretty heavy

Turin taken.

slaughter of all opposing the Carthaginian army; this was done as an object-lesson to coerce those tribes who were hostile to him. Considering the times in which he lived Hannibal was not a cruel man, he acted from motives of policy. Polybius gives us some interesting details about his supply arrangements in Italy. Special officers were told off for supply and foraging duties.

The men had regular rations of beef, grain and wine, with cheese, hams, oil for rubbing on their bodies, and "perfumery for their hair."

Rations.

No details are given of medical services, but a celebrated Surgeon named Synhalus is mentioned. There were Veterinary Officers and Paymasters. Polybius and Livy both speak of some kind of maps, so no doubt some of his officers had a knowledge of sketching. The Romans at that time had itineraries in the form of written reports (*annotata*) and sketches (*picta*). Hannibal was, however, a great believer in personal reconnaissance as far as that was possible. Signalling was carried out by smoke and flags. Hannibal made use of spies to a great extent, even in Rome itself. It was after the fall of Turin that he learnt that Scipio was back in Italy, at the same time he ascertained that the Senate at Rome, naturally disturbed at his presence, was divided in its counsels.

Of the two Roman armies for this year, one had gone to Spain, as already narrated, the other was wasting its time in Sicily trying to protect the coast from the small Carthaginian fleet sent by Hannibal from Spain.

Rome.

The other Carthaginian fleet sent to ravage the coast had been wrecked. This army in Sicily was commanded by Tiberius Sempronius and had been intended for an attack on Carthage itself. The operation had been delayed too long, Hannibal was already in Italy, and Rome being more immediately threatened, had to make the movements of her armies conform to those of Hannibal's army.

A third army of some 20,000 to 25,000 men remained in the Roman Colonies at Placentia, Cremona and Mutina; these had lately sustained a reverse at the hands of the Boians. Scipio arrived and took over command of this army on the day that Turin fell. He was too late to engage Hannibal as he emerged from the Alps, but he boldly crossed the river Po near to, and west of, Placentia and moved up the eastern bank of the Ticinus.

The advantage of the initiative in war.

Hannibal had crossed this river higher up with 6,000 cavalry and was moving south. Scipio with 2,000 Roman cavalry, some Gallic cavalry and light troops was moving ahead of his army when he met Hannibal's cavalry; a fight ensued, the Romans were surrounded and cut up, Scipio himself being severely wounded. The Romans fled back to their infantry and Hannibal wisely did not pursue. The first success was on his side, an important consideration when he depended so largely on the temperament of the Gauls, who were likely to side with the conqueror. The Romans retired south of the river Po and destroyed their bridge of rafts.

First fight.

Hannibal did not want to have to force the passage of the river in the face of opposition, so he marched two days up the left bank, crossed his cavalry by a light bridge and sent them out to gain information of Scipio's army and to cover the passage of his army. This was successfully accomplished, and the second day after the cavalry crossed, Hannibal moved by a forced march through the dangerous Stradella defile and arrived near Placentia where he offered Scipio battle. This was declined as the Roman General was laid up with his wound. Hannibal camped six miles from Placentia, hoping soon to entice Scipio out to fight.

The latter, however, was too cautious, and determined to wait till Sempronius could arrive with his army from Sicily. Hannibal placed himself south-east of Placentia on the road by which he expected Sempronius to arrive, but that Consul marching at an average rate of 16 miles a day for 40 days reached Ariminum and came on from there to Scipio's aid. Scipio meanwhile had moved out of Placentia to the west of the river Trebia among some Gauls friendly to Rome and here Sempronius joined him.

Hannibal apparently had moved on to the Ariminum road with the intention of fighting Sempronius before he could join Scipio, but

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how these two Roman armies did join and what route Sempronius took is not related; considering his superiority in cavalry Hannibal should not have allowed Sempronius to slip by. About this time he gained the fort and dépôt of Clastidium through the treachery of the Roman Governor; this furnished him with many rations and saved his drawing so heavily on his allies the Gauls. The Romans were now on Hannibal's line of communication as far as he had any, they were west of him and covered the Stradella defile by which he had advanced. But he wanted battle provided he could fight on ground of his own choosing. He knew too that Sempronius was a dashing fighter and without the caution displayed by Scipio. Winter was beginning and it would have been bad policy to expect his newly made friends, the Gauls, to supply his army whilst he remained in winter quarters among them, unless he had some signal success to point to as promise for the coming year. A victory was necessary. Hannibal therefore began raiding the territory of the Gauls who were loyal to Rome; these claimed protection and Sempronius marched out with cavalry and light troops and at first beat off Hannibal's raiders.

A few days afterwards one cold winter morning Hannibal sent his Numidians across the Trebia to worry the Romans. Sempronius turned out his cavalry and light troops, and appeared to

easily drive back the Numidians; but these latter had their instructions and they retired fighting across the river.

Then Sempronius calling out the whole of the Roman army (a few guards and the wounded Scipio only remained in camp), and thinking that he

had a grand opportunity to rush the Carthaginians, crossed the icy cold waters of the Trebia and formed up for battle on the eastern bank. Hannibal saw his plan succeeding and refrained from attacking during the crossing. He had, meanwhile, secretly placed his brother Mago with 1,000 horse and 1,000 light troops in an overgrown watercourse towards the right of the Roman line. He had prepared his own army for battle, they had had their breakfast (and rubbed their bodies with oil) and were ready for the fight. The armies were drawn up as shown on the sketch.* The Romans numbered 16,000 Roman and 20,000 allied infantry, and 4,000 cavalry, total 40,000. Hannibal had 8,000 light troops and 1,000 Balearic slingers as a skirmishing line, 20,000 infantry including Gauls as main body, and about 10,000 Cavalry including his allies, total 39,000. Hannibal also had his elephants, how many we do not know, but in most of his battles they seem to have been more dangerous to their own side than to the enemy.

The Roman light infantry (velites) were soon driven in behind the maniples in rear, and these advancing, met the Carthaginian centre and the battle began in earnest. The Carthaginian cavalry soon cattered the Roman cavalry and a portion went in pursuit while the

* *Idé* inset on Map of Italy at p. 236.

remainder charged the flanks and rear of the hostile infantry. At the same time Mago burst out on their right flank and rear. This entirely broke the Roman wings which were routed and few escaped across the river to Scipio's camp. The Roman centre, however, composed of Roman infantry pushed forward, and fighting with steady discipline and true Roman bravery they forced their way through the Carthaginian centre and succeeded in gaining Placentia, where the following night they were joined by the remnant of the army and Scipio.

Whether Hannibal's cavalry were too much out of hand after the battle or whether the Roman infantry were too formidable we do not know, but there was apparently no pursuit except of the Cavalry and the wings of the army which fled back to the Trebia. The slaughter here is said to have been enormous. The ground where the battle was fought was particularly favourable to the use of Cavalry and in this we see how careful Hannibal was to get every chance he could in his own favour. On the other hand, Sempronius by his rash pushing across the Trebia on to ground suitable to his opponents strong mounted force and without any reconnaissance, without a plan and without breakfast gave his army the fewest possible chances.

This is a good example of a battle, begun on the defensive, not on account of any marked inferiority, but as part of a deep-laid scheme to win a decisive victory. The decisive part of the battle was offensive, and it is believed to be the first battle recorded in secular history where a flank attack was combined with a frontal attack. It also illustrates the result of fighting a losing battle with a river close behind you, though such a position had in those days two advantages:—

- (1) It protected your rear from hostile cavalry.
- (2) It may have helped to keep doubtful men from bolting.

On this occasion, however, these advantages did not avail Sempronius.

The Romans having retired into Placentia and Cremona Hannibal now held all the country in the basin of the river Po. His losses in the battle were heavy, but they are not known exactly. His success was ample compensation, his base among the Gauls was now secure and many wavering tribes decided in his favour. During the early winter he was wounded in an unsuccessful attempt to rush the Roman dépôt at Emporium not far from Placentia, but he shortly afterwards captured Victunviae and gave it over to plunder.

About this time the Romans divided, Scipio went to Ariminum and Sempronius into Etruria by way of Luca. Hannibal then took up his quarters in Liguria where the Gauls definitely threw in their lot with him. But he was not quite comfortable for Polybius tells us how he used to disguise himself for fear of some Gaulish assassin when he went about the country. During the winter he made an unsuccessful attempt to enter Etruria through the Apennines. The severe weather drove him back and occasioned much loss in men and animals. This ended the first campaign in Italy.

From this year B. C. 218 till B. C. 203, that is for 16 years, Hannibal maintained war against Rome on Roman soil, and as it will be impossible to go into each year's operations in detail, I propose only to touch on the more interesting events of this period.

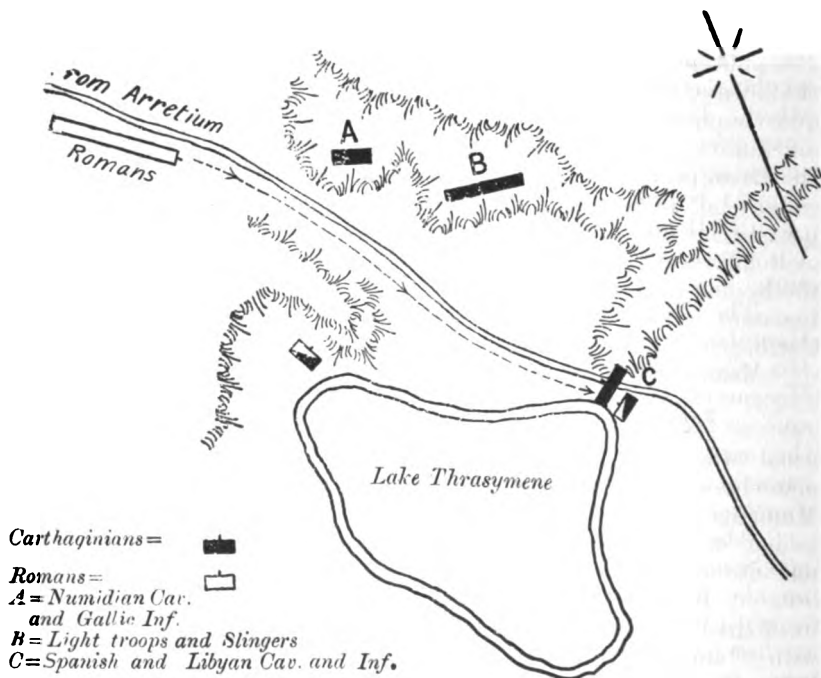
In 217 Hannibal advanced into Etruria, his army suffering great hardships in the marshes of the river Arno and he himself is said to have lost the sight of one eye through exposure.

B. C. 217.

Flaminius, one of the Consuls for the year who had succeeded Sempronius, was now at Arretium with an army of 36,000 men. Hannibal marched close by his camp, and continuing south and east passed round the northern shore of Lake Trasymene, but did not as yet show any signs of a desire to attack.

At a defile leading from the lake he found suitable ground for an ambush. "Locus insidiis natus," as Livy described it. He posted his light troops on the hills and his heavy infantry in the defile in front, with cavalry behind and wherever they could act.

Hannibal's numbers are not known. He had 39,000 at the Battle of the Trebia but since then he had lost many in his march through the Apennines and the marshes of the Arno.



Flaminius, after Hannibal had passed his camp, issued out and followed hard on his tracks. Early in the morning he entered this

defile and except 6,000 men of his advanced troops no one escaped, indeed these 6,000 got only as far as the nearest town and there, being unsupported, and without provisions they surrendered to Hannibal's Cavalry. Thus Hannibal destroyed the whole army; 15,000 were made prisoners and the remainder killed.

The Latin prisoners were freed at once and told that the war was not against them, but to help them to cast off the yoke of Rome. Hannibal thus hoped to detach the Latins from their allegiance to Rome. The Carthaginian loss in this battle was only 1,500.

On this occasion Hannibal showed his ability to judge character and to mislead his opponent. He knew that Flaminius, like Sempronius, was all for going headlong at his enemy, and he knew that the Roman army was very slack on the march, generally moving without any military precautions. It was only after several years of hard fighting and repeated defeats that the Romans *did* learn the intellectual part of war. As Colonel Dodge says:—"They already knew how to fight but not how to make war." War is just as much a game of deception now as it was 2,000 years ago; if you can deceive your enemy more than he can deceive you, you have gone a long way towards winning.

A few days afterwards, Maharbal, Hannibal's cavalry leader, met 4,000 horse sent from Ariminum to aid Flaminius, and killed or captured all of them. The road now appeared open to Rome, about 100 miles distant, but Hannibal, as far as we know, never entertained the idea of marching straight there. The city was strongly fortified and Hannibal had no siege material, its defenders were numerous and brave, but, chief reason of all, it was first necessary to win over the Latin peoples from their allegiance to Rome before any real hold could be obtained of the country as a whole, and until that was done it would have been only a rash act to knock his head against the walls of Rome. So Hannibal marched south-east burning and plundering the Roman villages as he went till he reached Apulia. Here he hoped to secure a new base and to open up communications by sea with Carthage.

Meanwhile the news of the slaughter at Lake Thrasymene had been carried to Rome. She rose to the occasion, and elected a Dictator instead of the usual two consuls, thus securing at last unity of command. The man chosen was Fabius, afterwards called Cunctator, who selected Minucius Rufus as his Master of the Horse. Not a single Roman soldier was recalled from *offensive* warfare in Spain. Rome was put into a better state of defence. Servilius and his army were brought from Ariminum to Rome, and then Fabius having raised fresh troops marched out with an army of 50,000 men and came up with Hannibal at Aecae in Apulia. Fabius had not come to fight but to dog Hannibal's footsteps, to cut off his foraging parties and generally to worry him without risking a pitched battle. This he did most successfully, although his men and officers were anxious to fight it out, and even the Roman people began to bring pressure to

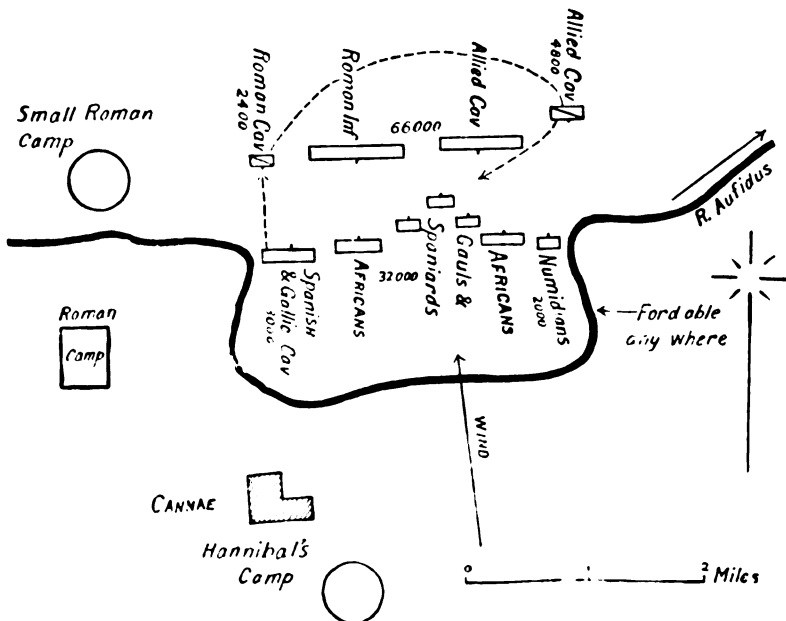
bear on Fabius to make him fight. But he stuck to his policy and never gave Hannibal a chance. He took good care to use advanced, flank and rear guards and he moved with extreme caution. He kept near hills where Hannibal's superior cavalry could not act.

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After the battle of Cannae Hannibal moved about Suessa and Campana and received the submission of several towns, but more as subjects than allies. He was severely checked by a young Roman Commander by name Marcellus at Nola in Campania. In

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the autumn he moved to Capua and prepared to go into winter quarters there.

Little of interest occurred during the winter, but in the spring we see a great change in the operations of Hannibal. In fact from B. C. 215 instead of carrying on a purely offensive war he was obliged to act to a large extent on the defensive.

The two chief causes for this fatal change were—

(1) Hannibal's veterans were dwindling in numbers, and were replaced by very inferior material recruited in Gaul and Italy.

(2) The Romans were learning how to make war.

They had now learnt that it was dangerous to attack Hannibal in the open. They could not manœuvre in battle as he could. So they adopted the system of Fabius and confined themselves to watching the Carthaginians, and restricting the area in which they could forage. In this way they hoped to starve them out of Italy. Looking at the numbers engaged it is marvellous how Hannibal continued the war at all. He now had 40,000 to 50,000 to Rome's 140,000, of whom 80,000 were directly opposing him.

Hannibal remained about Capua till the crops had been gathered, and during this time he received a slight reinforcement of elephants and cavalry from Carthage. He retired to Apulia in the autumn in order to prepare winter quarters.

The Government at Carthage had frittered away her men and material by sending small reinforcements to Spain, to Sardinia and to Hannibal, in neither place was any success gained. They would not realize that the fall of the Roman Power in Italy would mean the cessation of all opposition in Spain and Sardinia.

In B. C. 214 the result of the operations was decidedly in favour of Rome: she had 200,000 men in the field, of whom 90,000 were actually opposing Hannibal. The remainder were in Spain, Sardinia, Sicily, and Northern Italy. The Romans carried on the war in the same cautious way as in the previous year, and Hannibal had to act purely on the defensive. It is not, however, to be assumed because he did act on the defensive that he wished to act thus. He was on the watch for any opportunity that might arise to strike a sudden blow, but four years of war with him had brought the Romans up to date, they had learnt that war does not consist only in a kind of bull-dog fighting. The respect they had for Hannibal's power on the battlefield is proved by the fact that, with all their resources of men, they were afraid to engage him in battle in the open. His lieutenants they were not so afraid of. Hanno who had been down in Bruttium (the toe of Italy) and had raised a force of 17,000 Latins and 1,200 horse, chiefly Numidians, while marching to join Hannibal in Campania was attacked and his army nearly annihilated. The result of the year's campaign was the loss of many towns to the Carthaginians.

D

several occasions and probably took the place of the modern "general order" or "message from the King."

On the 11th day he started down the southern slopes which are steeper and more rugged than the northern.

In Italy.

He had great difficulty in passing places where avalanches had carried the track away, in fact he spent one whole day in making a road fit for horses and mules to pass an obstruction, and it required three more days' work to get the elephants by. Meanwhile the horses and mules moved on and three days later, *i.e.*, the 15th day after entering the mountains at Mont du Chat, they emerged on to the plain at the modern Ivrea. The elephants followed a few days later.

It was now five months since Hannibal left Cartagena. He then had 92,000 foot and horse. He crossed the Rhone with 46,000, of whom 8,000 were

Numbers.

horse. He now had 26,000 only, of whom 6,000 were horse. And these were so exhausted that, as Polybius says, "they were both in appearance and condition brought to a state more resembling that of wild beasts than human beings." We are not told how many of the transport animals survived, nor are we told how the army was fed during its march in the Alps. The first thing to do was to rest his men and this Hannibal was able to do in the territory of the Insubres his Gallic allies. Shortly afterwards, when the men were somewhat recovered from their fatigues, a move was made against the Taurini, then at war with the Insubres.

Their chief city Turin was taken after an attack lasting three days, and there was apparently a pretty heavy

Turin taken.

slaughter of all opposing the Carthaginian army; this was done as an object-lesson to coerce those tribes who were hostile to him. Considering the times in which he lived Hannibal was not a cruel man, he acted from motives of policy. Polybius gives us some interesting details about his supply arrangements in Italy. Special officers were told off for supply and foraging duties.

The men had regular rations of beef, grain and wine, with cheese, hams, oil for rubbing on their bodies, and "perfumery for their hair."

Rations.

No details are given of medical services, but a celebrated Surgeon named Synhalus is mentioned. There were Veterinary Officers and Paymasters. Polybius and Livy both speak of some kind of maps, so no doubt some of his officers had a knowledge of sketching. The Romans at that time had itineraries in the form of written reports (*annotata*) and sketches (*picta*). Hannibal was, however, a great believer in personal reconnaissance as far as that was possible. Signalling was carried out by smoke and flags. Hannibal made use of spies to a great extent, even in Rome itself. It was after the fall of Turin that he learnt that Scipio was back in Italy, at the same time he ascertained that the Senate at Rome, naturally disturbed at his presence, was divided in its counsels.

Of the two Roman armies for this year, one had gone to Spain, as already narrated, the other was wasting its time in Sicily trying to protect the coast from the small Carthaginian fleet sent by Hannibal from Spain.

Rome.

The other Carthaginian fleet sent to ravage the coast had been wrecked. This army in Sicily was commanded by Tiberius Sempronius and had been intended for an attack on Carthage itself. The operation had been delayed too long, Hannibal was already in Italy, and Rome being more immediately threatened, had to make the movements of her armies conform to those of Hannibal's army.

A third army of some 20,000 to 25,000 men remained in the Roman Colonies at Placentia, Cremona and Mutina; these had lately sustained a reverse at the hands of the Boians. Scipio arrived and took over command of this army on the day that Turin fell. He was too late to engage Hannibal as he emerged from the Alps, but he boldly crossed the river Po near to, and west of, Placentia and moved up the eastern bank of the Ticinus.

The advantage of the initiative in war.

Hannibal had crossed this river higher up with 6,000 cavalry and was moving south. Scipio with 2,000 Roman cavalry, some Gallic cavalry and light troops was moving ahead of his army when he met Hannibal's cavalry; a fight ensued, the Romans were surrounded and cut up, Scipio himself being severely wounded. The Romans fled back to their infantry and Hannibal wisely did not pursue. The first success was on his side, an important consideration when he depended so largely on the temperament of the Gauls, who were likely to side with the conqueror. The Romans retired south of the river Po and destroyed their bridge of rafts.

First fight.

Hannibal did not want to have to force the passage of the river in the face of opposition, so he marched two days up the left bank, crossed his cavalry by a light bridge and sent them out to gain information of Scipio's army and to cover the passage of his army. This was successfully accomplished, and the second day after the cavalry crossed, Hannibal moved by a forced march through the dangerous Stradella defile and arrived near Placentia where he offered Scipio battle. This was declined as the Roman General was laid up with his wound. Hannibal camped six miles from Placentia, hoping soon to entice Scipio out to fight.

The latter, however, was too cautious, and determined to wait till Sempronius could arrive with his army from Sicily. Hannibal placed himself south-east of Placentia on the road by which he expected Sempronius to arrive, but that Consul marching at an average rate of 16 miles a day for 40 days reached Ariminum and came on from there to Scipio's aid. Scipio meanwhile had moved out of Placentia to the west of the river Trebia among some Gauls friendly to Rome and here Sempronius joined him.

Hannibal apparently had moved on to the Ariminum road with the intention of fighting Sempronius before he could join Scipio, but

how these two Roman armies did join and what route Sempronius took is not related; considering his superiority in cavalry Hannibal should not have allowed Sempronius to slip by. About this time he gained the fort and depôt of Clastidium through the treachery of the Roman Governor; this furnished him with many rations and saved his drawing so heavily on his allies the Gauls. The Romans were now on Hannibal's line of communication as far as he had any, they were west of him and covered the Stradella defile by which he had advanced. But he wanted battle provided he could fight on ground of his own choosing. He knew too that Sempronius was a dashing fighter and without the caution displayed by Scipio. Winter was beginning and it would have been bad policy to expect his newly made friends, the Gauls, to supply his army whilst he remained in winter quarters among them, unless he had some signal success to point to as promise for the coming year. A victory was necessary. Hannibal therefore began raiding the territory of the Gauls who were loyal to Rome; these claimed protection and Sempronius marched out with cavalry and light troops and at first beat off Hannibal's raiders.

A few days afterwards one cold winter morning Hannibal sent his Numidians across the Trebia to worry the Romans. Sempronius turned out his cavalry and light troops, and appeared to

Battle of Trebia.
B. C. 218.

easily drive back the Numidians; but these latter had their instructions and they retired fighting across the river.

Then Sempronius calling out the whole of the Roman army (a few guards and the wounded Scipio only remained in camp), and thinking that he had a grand opportunity to rush the Carthaginians, crossed the icy cold waters of the Trebia and formed up for battle on the eastern bank. Hannibal saw his plan succeeding and refrained from attacking during the crossing. He had, meanwhile, secretly placed his brother Mago with 1,000 horse and 1,000 light troops in an overgrown watercourse towards the right of the Roman line. He had prepared his own army for battle, they had had their breakfast (and rubbed their bodies with oil) and were ready for the fight. The armies were drawn up as shown on the sketch.* The Romans numbered 16,000 Roman and 20,000 allied infantry, and 4,000 cavalry, total 40,000. Hannibal had 8,000 light troops and 1,000 Balearic slingers as a skirmishing line, 20,000 infantry including Gauls as main body, and about 10,000 Cavalry including his allies, total 39,000. Hannibal also had his elephants, how many we do not know, but in most of his battles they seem to have been more dangerous to their own side than to the enemy.

The Roman light infantry (velites) were soon driven in behind the maniples in rear, and these advancing, met the Carthaginian centre and the battle began in earnest. The Carthaginian cavalry soon cattered the Roman cavalry and a portion went in pursuit while the

* *Vide* inset on Map of Italy at p. 236.

remainder charged the flanks and rear of the hostile infantry. At the same time Mago burst out on their right flank and rear. This entirely broke the Roman wings which were routed and few escaped across the river to Scipio's camp. The Roman centre, however, composed of Roman infantry pushed forward, and fighting with steady discipline and true Roman bravery they forced their way through the Carthaginian centre and succeeded in gaining Placentia, where the following night they were joined by the remnant of the army and Scipio.

Whether Hannibal's cavalry were too much out of hand after the battle or whether the Roman infantry were too formidable we do not know, but there was apparently no pursuit except of the Cavalry and the wings of the army which fled back to the Trebia. The slaughter here is said to have been enormous. The ground where the battle was fought was particularly favourable to the use of Cavalry and in this we see how careful Hannibal was to get every chance he could in his own favour. On the other hand, Sempronius by his rash pushing across the Trebia on to ground suitable to his opponents strong mounted force and without any reconnaissance, without a plan and without breakfast gave his army the fewest possible chances.

This is a good example of a battle, begun on the defensive, not on account of any marked inferiority, but as part of a deep-laid scheme to win a decisive victory. The decisive part of the battle was offensive, and it is believed to be the first battle recorded in secular history where a flank attack was combined with a frontal attack. It also illustrates the result of fighting a losing battle with a river close behind you, though such a position had in those days two advantages :—

(1) It protected your rear from hostile cavalry.

(2) It may have helped to keep doubtful men from bolting.

On this occasion, however, these advantages did not avail Sempronius.

The Romans having retired into Placentia and Cremona Hannibal now held all the country in the basin of the river Po. His losses in the battle were heavy, but they are not known exactly. His success was ample compensation, his base among the Gauls was now secure and many wavering tribes decided in his favour. During the early winter he was wounded in an unsuccessful attempt to rush the Roman dépôt at Emporium not far from Placentia, but he shortly afterwards captured Victumviac and gave it over to plunder.

About this time the Romans divided, Scipio went to Ariminum and Sempronius into Etruria by way of Luca. Hannibal then took up his quarters in Liguria where the Gauls definitely threw in their lot with him. But he was not quite comfortable for Polybius tells us how he used to disguise himself for fear of some Gaulish assassin when he went about the country. During the winter he made an unsuccessful attempt to enter Etruria through the Apennines. The severe weather drove him back and occasioned much loss in men and animals. This ended the first campaign in Italy.

From this year B. C. 218 till B. C. 203, that is for 16 years, Hannibal maintained war against Rome on Roman soil, and as it will be impossible to go into each year's operations in detail, I propose only to touch on the more interesting events of this period.

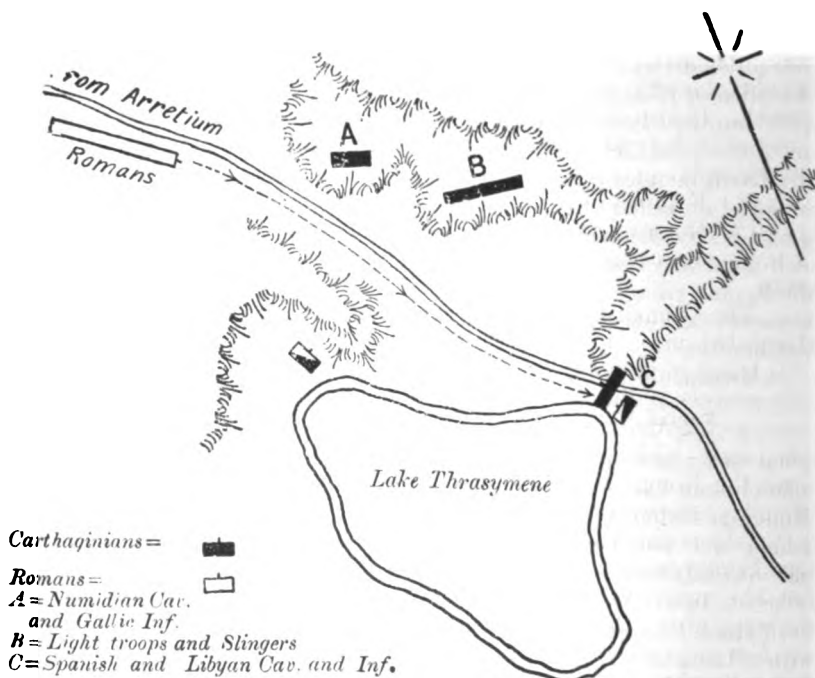
In 217 Hannibal advanced into Etruria, his army suffering great hardships in the marshes of the river Arno and he himself is said to have lost the sight of one eye through exposure.

B. C. 217.

Flaminius, one of the Consuls for the year who had succeeded Sempronius, was now at Arretium with an army of 36,000 men. Hannibal marched close by his camp, and continuing south and east passed round the northern shore of Lake Thrasymene, but did not as yet show any signs of a desire to attack.

At a defile leading from the lake he found suitable ground for an ambush. "*Locus insidiis natus*," as Livy described it. He posted his light troops on the hills and his heavy infantry in the defile in front, with cavalry behind and wherever they could act.

Hannibal's numbers are not known. He had 39,000 at the Battle of the Trebia but since then he had lost many in his march through the Apennines and the marshes of the Arno.



Flaminius, after Hannibal had passed his camp, issued out and followed hard on his tracks. Early in the morning he entered this

defile and except 6,000 men of his advanced troops no one escaped, indeed these 6,000 got only as far as the nearest town and there, being unsupported, and without provisions they surrendered to Hannibal's Cavalry. Thus Hannibal destroyed the whole army; 15,000 were made prisoners and the remainder killed.

The Latin prisoners were freed at once and told that the war was not against them, but to help them to cast off the yoke of Rome. Hannibal thus hoped to detach the Latins from their allegiance to Rome. The Carthaginian loss in this battle was only 1,500.

On this occasion Hannibal showed his ability to judge character and to mislead his opponent. He knew that Flaminius, like Sempronius, was all for going headlong at his enemy, and he knew that the Roman army was very slack on the march, generally moving without any military precautions. It was only after several years of hard fighting and repeated defeats that the Romans *did* learn the intellectual part of war. As Colonel Dodge says :—"They already knew how to fight but not how to make war." War is just as much a game of deception now as it was 2,000 years ago; if you can deceive your enemy more than he can deceive you, you have gone a long way towards winning.

A few days afterwards, Maharbal, Hannibal's cavalry leader, met 4,000 horse sent from Ariminum to aid Flaminius, and killed or captured all of them. The road now appeared open to Rome, about 100 miles distant, but Hannibal, as far as we know, never entertained the idea of marching straight there. The city was strongly fortified and Hannibal had no siege material, its defenders were numerous and brave, but, chief reason of all, it was first necessary to win over the Latin peoples from their allegiance to Rome before any real hold could be obtained of the country as a whole, and until that was done it would have been only a rash act to knock his head against the walls of Rome. So Hannibal marched south-east burning and plundering the Roman villages as he went till he reached Apulia. Here he hoped to secure a new base and to open up communications by sea with Carthage.

Meanwhile the news of the slaughter at Lake Thrasymene had been carried to Rome. She rose to the occasion, and elected a Dictator instead of the

Fabius.

usual two consuls, thus securing at last unity of command. The man chosen was Fabius, afterwards called Cunctator, who selected Minucius Rufus as his Master of the Horse. Not a single Roman soldier was recalled from *offensive* warfare in Spain. Rome was put into a better state of defence. Servilius and his army were brought from Ariminum to Rome, and then Fabius having raised fresh troops marched out with an army of 50,000 men and came up with Hannibal at Aecae in Apulia. Fabius had not come to fight but to dog Hannibal's footsteps, to cut off his foraging parties and generally to worry him without risking a pitched battle. This he did most successfully, although his men and officers were anxious to fight it out, and even the Roman people began to bring pressure to

bear on Fabius to make him fight. But he stuck to his policy and never gave Hannibal a chance. He took good care to use advanced, flank and rear guards and he moved with extreme caution. He kept near hills where Hannibal's superior cavalry could not act.

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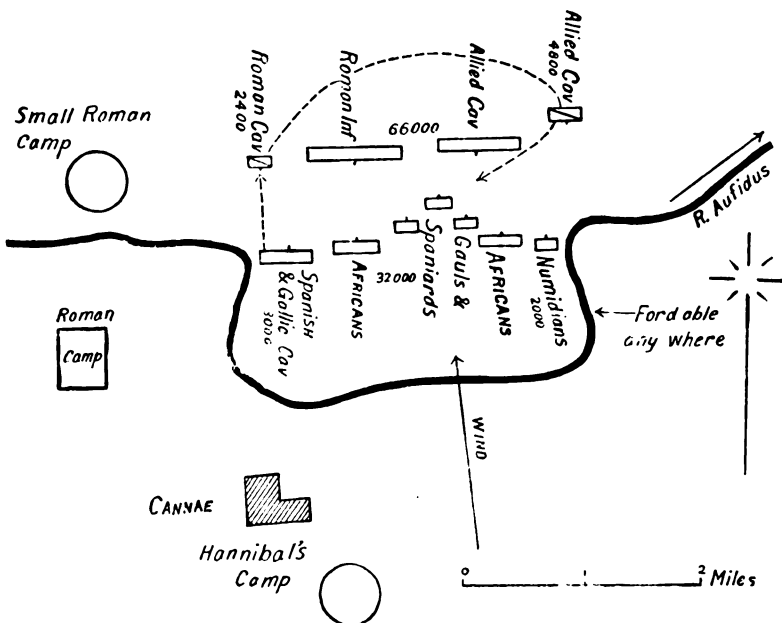
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* [This account and sketch of the battle of Cannae follow those given by Bosworth Smith and Col. Dodge. I would call attention to the excellent sketch given in Major Gilbert's "Evolution of Modern Tactics," Part I, which appeared in the October 1904 number of this Journal.

This latter differs in many respects from the authorities I have consulted, but it brings out very clearly the action of the heavy Cavalry on Hannibal's left and the fine work they did in destroying two separate bodies of the Roman Cavalry and then returning to take a very important part in the main Infantry fight.]

the autumn he moved to Capua and prepared to go into winter quarters there.

Little of interest occurred during the winter, but in the spring we see a great change in the operations of Hannibal. In fact from B. C. 215 instead of carrying on a purely offensive war he was obliged to act to a large extent on the defensive.

The two chief causes for this fatal change were—

(1) Hannibal's veterans were dwindling in numbers, and were replaced by very inferior material recruited in Gaul and Italy.

(2) The Romans were learning how to make war.

They had now learnt that it was dangerous to attack Hannibal in the open. They could not manœuvre in battle as he could. So they adopted the system of Fabius and confined themselves to watching the Carthaginians, and restricting the area in which they could forage. In this way they hoped to starve them out of Italy. Looking at the numbers engaged it is marvellous how Hannibal continued the war at all. He now had 40,000 to 50,000 to Rome's 140,000, of whom 80,000 were directly opposing him.

Hannibal remained about Capua till the crops had been gathered, and during this time he received a slight reinforcement of elephants and cavalry from Carthage. He retired to Apulia in the autumn in order to prepare winter quarters.

The Government at Carthage had frittered away her men and material by sending small reinforcements to Spain, to Sardinia and to Hannibal, in neither place was any success gained. They would not realize that the fall of the Roman Power in Italy would mean the cessation of all opposition in Spain and Sardinia.

In B. C. 214 the result of the operations was decidedly in favour of Rome; she had 200,000 men in the field, of whom 90,000 were actually

opposing Hannibal. The remainder were in Spain, Sardinia, Sicily, and Northern Italy. The Romans carried on the war in the same cautious way as in the previous year, and Hannibal had to act purely on the defensive. It is not, however, to be assumed because he did act on the defensive that he wished to act thus. He was on the watch for any opportunity that might arise to strike a sudden blow, but four years of war with him had brought the Romans up to date, they had learnt that war does not consist only in a kind of bulldog fighting. The respect they had for Hannibal's power on the battlefield is proved by the fact that, with all their resources of men, they were afraid to engage him in battle in the open. His lieutenants they were not so afraid of. Hanno who had been down in Bruttium (the toe of Italy) and had raised a force of 17,000 Latins and 1,200 horse, chiefly Numidians, while marching to join Hannibal in Campania was attacked and his army nearly annihilated. The result of the year's campaign was the loss of many towns to the Carthaginians.

The records of the next two years are scanty. The Roman armies became more numerous, but no help came to Hannibal. In B. C. 213 he remained near Tarentum and in B. C. 212 he succeeded in capturing that town and its fleet but not its citadel. The Tarentine fleet was in an inland sea, the exit of which was commanded by the citadel. Hannibal dragged the ships across country to the sea by means of rollers and successfully launched them much to the surprise of the Romans. He was now able to blockade the citadel by land and sea.

During this and the next year, however, the chief military operation was the siege of Capua by the Romans. Each year Hannibal marched to its help.

In B. C. 212 he succeeded in relieving the place for a time and dealt several severe blows to Roman detachments; the next year failing to relieve it directly, he tried the effect of a march on Rome. But the Roman Generals now knew their business too well. Rome was strong in men and walls, the siege was continued, only a small detachment being made to help the defenders of Rome should Hannibal really attack. It is probable that the latter never intended to assault Rome at all; if he thought such an operation unwise after Cannae it was doubly unwise now. He retired to Tarentum.

But the move itself reads almost like one of the threats made by Lee or Jackson against Washington, only in the modern case the threatened Generals were not so wise as were the Roman Generals. In the autumn of this year Capua fell.

During the next two years, B. C. 210 and 209 the war continued with no decisive operations. Several of Hannibal's allied cities fell, but still he marched where he wished through the country, the Roman Generals being afraid of a stand-up fight.

In B. C. 208 Marcellus fell into an ambushade and was killed. He was one of Rome's best Generals and with Scipio, Nero and Fabius may be said to have saved Rome. This year Hasdrubal (Hannibal's brother) with an army, having eluded Scipio Africanus in Spain, crossed the river Ebro and the western end of the Pyrenees and entered Gaul where he passed the winter.

The next year he crossed the Alps and descended into the valley of the river Po. From Placentia he sent a small party with a written message to Hannibal giving his plans and proposed route. The party traversed the whole length of Italy to near Tarentum and there, when almost at their goal (for Hannibal was then at Metapontum) they were captured and the plan disclosed to Nero.

This officer selected 7,000 of his best troops and by the help of country carts and hard marching he transported them 250 miles to join the Roman army opposing Hasdrubal, then near the river Metaurus. This was done in seven days.

A battle was at once forced on Hasdrubal and ended in the complete destruction of his army, he himself being killed. This was the great Roman victory of the Second Punic War and it was the victory which finally crushed all hope of success for the Carthaginians in Italy. More reinforcements could not now be expected. We do not know the numbers engaged in this great battle, but the Carthaginian and Roman losses are said by Livy to have been 56,000 and 8,000 killed respectively, and by Polybius 10,000 and 2,000. Which is correct it is impossible to determine. The battle is said to have been a second Cannae and certainly nothing was ever heard of any survivors on the Carthaginian side. Nero marched back the 250 miles in six days, and was brutal enough to stick the head of Hasdrubal on a pike and send it to Hannibal's outposts.

This feat of Nero's is a classical example of the use that can be made of the possession of interior lines of operation, and of the difficulty of combining the operations of armies acting from different directions.

From B. C. 206—203 Hannibal remained in Italy, but he was confined now to Bruttium. The Roman

B. C. 206—204.

Generals still feared him, they must have known that a single combined effort would crush him but none dared to try.

Meanwhile Scipio finally drove the Carthaginians out of Spain and he himself came back to Sicily as consul in B. C. 205. The same year Mago, another brother of Hannibal, landed at Genoa with about 20,000 men, but he met with little success, and in B. C. 203 he was defeated and killed. The camps of both the Romans and Carthaginians in Bruttium were in B. C. 204 and 203 decimated by epidemics and little could be done on either side.

Meanwhile Scipio prepared a great expedition against Carthage itself and in the spring of B. C. 204 he set sail from Lilybæum with 30,000 of his best troops. He used 50 war vessels and 400 transports and took 45 days' rations. He landed near Utica. Carthage naturally was in terror. An army was hurriedly raised and the command given to a general named Hasdrubal (not of Hannibal's family) and Syphax, an ally, joined him. Scipio instead of marching at once against this army, which really was only a rabble, began to besiege Utica. He wasted the year in this attempt and then went into winter quarters. This was different to Hannibal's first operations when he entered Roman territory 14 years before, and shows that Scipio, though a good soldier, was hardly to be compared with Hannibal in military genius.

Early in B. C. 203 he burned the camps and destroyed the army of Hasdrubal and Syphax. These two, however raised another army, and this also

B. C. 203.

was destroyed. Scipio at last moved against Carthage. Just before this, Hannibal had been sent for from Italy. He safely embarked his army at Crotona without any interference by the Romans as far as we know, crossed to Africa and landed in the autumn of B. C. 203 at

Leptis with 24,000 men and wintered near there. He had not ships for his horses and had to kill them.

In the spring of the next year Hannibal fought his last battle, the battle of Zama. He had a wretched army, very inferior in every way to his opponent's. His cavalry were few and undisciplined; his great stand-by, the Numidian horse, were many of them fighting for the Romans. He probably had no desire to fight, for we read that he had a personal interview with Scipio and endeavoured to arrange a peace; Scipio demanded the surrender of Carthage, so the Senate ordered Hannibal to fight.

Numerically he was superior to the Romans, the numbers were about 50,000 Carthaginians to 43,000 Romans, but the former were a very mixed army—Gauls, Ligurians, Bruttians, Balearians, Moors, Macedonians, Africans and Carthaginians proper.

Eighty elephants led the army of Hannibal, these, as often occurred, did more harm to their own side than to the enemy. Hannibal's cavalry on the flanks were chased off the field by Scipio's cavalry. The Infantry met and fought well, but the Roman legions swept all before them. The armies had been drawn up in three lines, the first two lines of the Carthaginians having fled, the third advanced. This was Hannibal's reserve and was composed of all the veterans who remained to him. The fight lasted long and the result was doubtful and in fact was rather favourable to Hannibal when suddenly the Roman cavalry returned from the pursuit of Hannibal's cavalry and charged down on the rear and flanks of his infantry. This was the end. Most of them fell fighting, but Hannibal escaped to Carthage. Carthage then had to submit. She was ruined.

Hannibal lived for 19 years after Zama; he tried to serve his country, and to check abuses and corruption in the Government, but this made him many enemies. Then he was suspected by Rome of fostering an alliance against her with Syria and was demanded as a hostage. He fled to Antiochus, King of Syria.

This monarch was defeated by Rome and ordered to deliver up Hannibal, but he fled to Prusias, King of Bithynia. He died, some say, by his own hand, at the age of 64.

It is a curious thing that all we know of this great man was written by his enemies, except perhaps Polybius, but he, though a Greek, was in the service of the Roman State and got his information chiefly from Roman sources. We may therefore be sure that there is little of hero-worship in the accounts of his life. He has been charged with cruelty, perfidy and impiety. As far as history relates he was no more cruel than was the custom of the age in which he lived, less cruel than many Roman Generals. His perfidy was stratagem which the Romans at first did not understand. His impiety consisted in his religion being different to that of Rome. His success as a soldier

Conclusion.

appears to have been greatly due to the fact that he never did what his adversary expected him to do, and to his steadfastness; it is true that during his first three years in Italy his opponents showed no military knowledge; they learnt from him, but they never equalled, or even approached him in skill and initiative. He, even with his inferior army, could march almost anywhere he chose, none dared attack him. Until the last great fight at Zama he was never beaten in a pitched battle; he suffered reverses, but not a downright defeat. His operations were brilliant up to Cannae, but it was after that that he showed his greatest qualities, when his enemy continually increased in power and resources, and he, through the blindness of his Government, continually diminished in power. It was at this time that he showed what moral superiority in war can be worth. His ascendancy over the minds of his opponents and of his own men was extraordinary. As far as we know Hannibal made no military mistakes.

Hannibal has been called the "Father of Strategy." Up to his day wars had been carried on having regard to tactics only (except perhaps those of Alexander and a few other isolated instances). Armies marched straight at each other, there was no idea of placing the other at a disadvantage. But in Italy after Cannae, the ruling idea on both sides was to make use of the advantages offered by strategy to get every chance of success on one's own side. Hannibal was the originator of these ideas. The march of Nero to the Metaurus was one of Rome's finest pieces of strategy.

The command of the sea was on the side of Rome during this war, but she had not undisputed command till about B. C. 205 or 204. She then took advantage of it and attacked her enemy at his home, showing that she realised the power given her by the possession of a safe highway on the sea.

Politically he had misjudged his power of winning over the Latin allies of Rome, but it was the absence of help from his country that was the cause of the failure of his life's work, and of his country's ruin.

It may be useful now to compare briefly the relative fighting capabilities of the Roman and Carthaginian armies for they are types of the national and the mercenary army. What were the characteristics of the Roman or national army?

National vs. mercenary armies.

I think we may certainly describe the legionaries as steady, plodding, brave soldiers, men who invariably assumed the offensive in the fight, who never knew when they were beaten, who could suffer reverse after reverse, who though they must have felt that their leaders were inferior to the great man opposed to them nevertheless responded continually to the call to arms in their country's need. They were indeed patriots. Many of them had but lately come under the Roman standard, but we must remember that Rome treated the Italian races liberally, they joined the commonwealth with civil rights and not as subjects and very soon learnt to consider

Roman interests as their interests. This was fully proved in the Second Punic War when very few of them fell away from Rome even after Cannae. So that though we read of Roman legions and allied (Latin) legions fighting side by side we may look on them as parts of one national army.

It is to be remarked too that these men were all drawn from well-to-do classes, all were owners of land, all males were liable to serve in the field from the age of 17 to 45 and afterwards in garrison. In ordinary times of peace, however, the Roman probably received his discharge from service when comparatively a young man.

The lesson is this:—In the end, in spite of the military ignorance of their own leaders and the commanding personality and power of their opponent Hannibal, these were the soldiers and theirs was the nation which came out of the war supreme.

They were fortunate in that their adversary not only taught them war but gave them time to learn. All adversaries, especially in these days of the twentieth century, will not be so considerate.

And what of the Carthaginian army?

We know it was a very mixed force. There were in it the pure Carthaginians, in very small numbers, but generally well born men, Libyans, Iberians and men from the Balearic Isles, Numidians, Gauls, and latterly Hannibal recruited many good soldiers in Italy itself. Each of these had his own style of fighting, each had his own characteristics, his own language and dress. The Carthaginian was a proud and stubborn soldier especially in a crisis, the Iberians were dashing and fiery, the Gauls were ferocious and fickle, and the Numidians were clever and very "tricky." Each had his own kind of weapon but they were not so well armed as the Roman soldier.

The usual formation for fighting was the phalanx, a mass of about 6,000 men, 16 to 20 deep. This cannot have been nearly so flexible as the Roman legion which was divided into three lines and sub-divided into maniples each with its officers, and its proper intervals and distances. The Carthaginian army possessed no regular order, there was no systematic training or organisation, it can have had no patriotic feeling and it could never have been able to bear defeat. The ties which bound it together were victories with pay and plunder, and extreme devotion to Hannibal.

It certainly was superior to the Roman army in two points:—(1) in its fire power if one may so speak, *i.e.*, in its slingers and archers, and (2) in its cavalry. These latter were expert at reconnoitring, on the battlefield and in pursuit.

But most important of all, it had the advantage of having a great leader who commanded it right through the war. This gave the Carthaginians an enormous advantage over the Romans, who changed their commanders constantly as we have already seen. We may safely say that without Hannibal and his family there could have been no Second Punic War. It was his personality alone which kept this heterogeneous mass together. In spite of Hannibal, however, this once mighty force failed in the end.

The lesson we may learn from this is that unless an army is national, is moved by common interests and impulses and backed by a united and co-operating people it will not survive a prolonged conflict, it cannot be counted as an imperial factor in the world and it will not even command respect among its neighbours for the nation which employs it is already showing signs of decay.

Although naval affairs enter very little into the wars of Hannibal there are great naval lessons to be deduced from this war.

Naval lessons.

The Carthaginian Admiral, Homilcar, in the 4th year of the war, after Cannae, landed 4,000 men and a body of elephants in the south of Italy. Hannibal also frequently sent despatch vessels to Carthage and finally transported his army back to Africa.

This creates a natural impression that constant help could have been given by Carthage, but Captain Mahan in his "Influence of Sea Power upon History," after referring to the help which Hannibal had hoped to receive from Philip of Macedon, writes:—"The Roman sea power, therefore, threw Macedonia wholly out of the war. It did not keep Carthage from maintaining a useful and most harassing diversion in Sicily; but it prevented her sending troops, when they would have been most useful, to her great General in Italy." Whether Carthage wished or tried to send troops is another matter into which Captain Mahan does not enter.

Rome had 220 ships of war at the beginning of the war and undoubtedly had command of the sea between Spain and Italy and in the Adriatic, though it was not until quite the latter end of the war that she realised the tremendous effect of a blow aimed directly at Carthage itself. We read, however, that after Zama, when Carthage surrendered, she first burnt all her ships to the number of 500. This points to most culpable neglect on her part. Why did she not man these ships and make an effort to recover her supremacy on the sea as in the years gone by before the First Punic War? Either her spirit was gone or she did not realise the power which command of the sea would have conferred both in offence and defence. The peace party and the dissensions and corruptions at home were probably the true cause of this fatal neglect.

Here then is a lesson which it is devoutly to be hoped will not require to be impressed on our rulers, but it is a lesson to bear in mind when men in authority turn their thoughts primarily to parochial politics and are prone to forget imperial needs.

The greatest lesson, however, to be learnt from this fascinating personality and the history of his life and times is, I think, the importance of harmony between the leaders of people and the leaders of the army, or as one may put it now between politics and strategy. Even a great general and a fine army must fail in the end unless the politics of the rulers and the strategy of the general are working to a common end.

Under a constitution like ours the will of the people, whether it is guided by a strong personality or by mediocre politicians, must be

reflected in the aims of the army in peace and in the strategy of the army in war. A hesitating people will have a hesitating policy and a hesitating strategy. A people who know their own minds, who know what they want and who have the quality of uniting for the national good, *i.e.*, patriotism, will impose their will on their army and will infuse it with the same qualities as they themselves possess, for the army is theirs and in great part it is themselves. It is only thus that sound national strategy is evolved and continued, and without sound national strategy, sound strategy, in the theatre of war will not be possible.

Surely this is a lesson for us as a nation and as individuals. Instead of thinking only of our commerce and our own comfort let us put the good of our country first and all that that implies, the good of our army, the good of our regiment.

Commerce is necessary and of vital importance, but on what does it depend? Does it not depend on our strong right arm and, I may add, on our strong left arm too? Will we allow ourselves to be blinded by the belief that power just to defend ourselves if attacked is sufficient for a commercial nation which must either expand or fall behind altogether?

Is it or is it not necessary to have the power to strike as well as to ward off a blow. How did we regard the boy at school who would only put up his hands to protect himself but would not hit out? How do we regard the nation which cannot enforce its policy by power to strike at any rate one good blow? Our navy, we feel sure, will parry blows aimed at us as far as it is physically possible for her to do so, but what about the return blows to be made on land? We require a strong right *and* left arm. Carthage lacked harmony, lacked unity of purpose, in other words would not provide a pair of strong arms and was ruined entirely.

Fig. 1.

Section of Fuse and method of attaching to light.

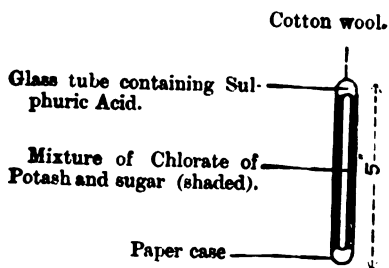
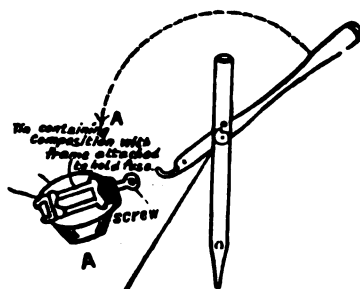


Fig. 2.

Lever for firing Fuse.



Catch and stud which prevent lever falling except towards A.

Fig. 3.

Lever closed.

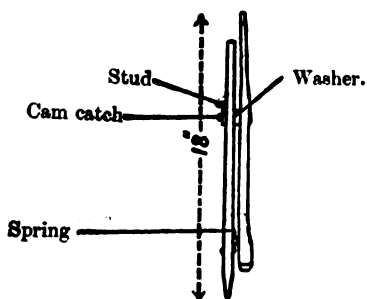


Fig. 4.

Cam catch.

A—when supporting lever.
B—after lever has fallen.

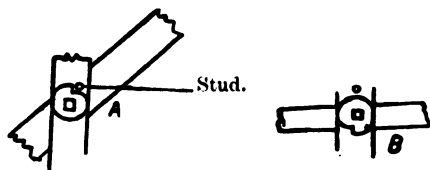


Fig. 5.

Fig. 6.

Figs. 5 and 6 show two levers working in series. The first has fallen and the wire being released the second is ready for action.

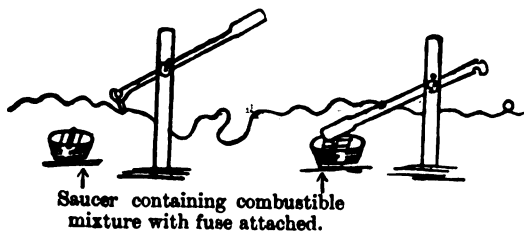
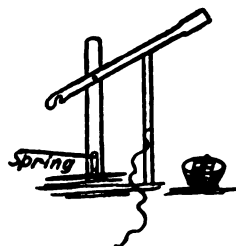


Fig. 7.

Lever propped up by stick attached to trip wire.



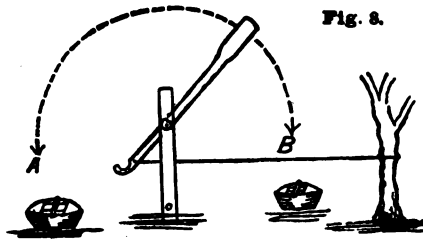


Fig. 8 shows the lever arranged so as to fire a light, whichever way it falls. This method is useful when the enemy may cut the wire, *e.g.*, in a line of fence between block houses.

N.B.—The stud has been removed and the lever is supported by the tension of the wire only.

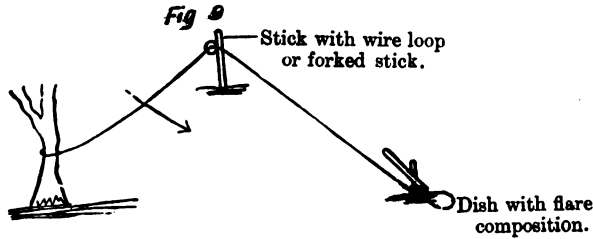
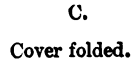
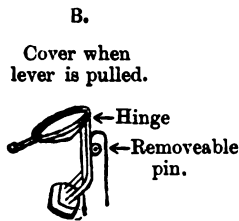
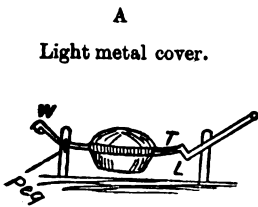


Fig. 10.



FLARE LIGHTS FOR THE PROTECTION OF CAMPS BY NIGHT.

By MAJOR C. B. BALDOCK, 44TH MERWARA INFANTRY.

The importance of having some means of preventing a rush on small posts at night, especially in Savage Warfare, is so obvious that it would be a waste of time to enlarge upon it.

Highly scientific devices such as search-lights and star shells are outside the scope of this article, which is intended to deal with such makeshift devices as are described on page 47 of the Manual of Military Engineering, 1905, and page 69 Training Manuals, Appendix, 1905. The means of illumination there suggested are bonfires and flare lights, and in this Manual of Military Engineering a highly ingenious, though somewhat cumbersome, device for igniting these is suggested; while the Appendix is silent on this point.

I am informed by an officer, who served with the Somali Expedition, that it was the custom to prepare bonfires beforehand, and on the alarm sounding, for a sepoy specially detailed for the purpose, to rush out and fire the bonfire and then dart back behind the defensive perimeter; but that, on one occasion at least, he was stabbed while doing so, the enemy having lain in wait near the bonfire. This danger is so obvious that this method may be dismissed at once as unsatisfactory. As regards the contrivance shown in the Engineering Manual the absence of railway material would in most cases render it impossible to construct, while it would be extremely cumbersome to carry if required for use by a piquet on a hill top for instance. The object of this article is therefore to bring to notice an exceedingly simple and portable device with which the writer has for some time been experimenting, and which also has the merit of being cheap and easily manufactured by anyone even though possessing no mechanical skill.

The writer hopes that Double Company Commanders may be induced to try it when working night firing and outpost schemes with their double companies. Improvements in detail will possibly suggest themselves.

The whole device depends on the fact that a mixture of chlorate of potash and sugar ignites if brought into contact with sulphuric acid. In the method used by the writer a small glass tube is filled with sulphuric acid and sealed at each end. This is then inserted in a case of paper about the thickness of one's little finger, and the space between packed with a mixture of chlorate of potash and sugar closed at each end and varnished (*vide* Fig.1). When the fuse thus formed is given a smart blow, the glass tube is broken, releasing the sulphuric acid and causing ignition. The fuse has only to be placed in contact with some combustible material and broken by a stone or other weight falling on it to be set alight.

E-1

The stone can be poised, for instance, on a tent peg, and pulled over by a string. This method is, of course, crude; but perfectly effective if no other is available.

The contrivance used by the writer is shown in the accompanying plate and can easily be made by any regimental armourer. Fig. 2 shows the lever in position for use and Fig. 3 when packed for carriage. Fig. 4 represents the stop which prevents the lever falling over backwards. The lever can either be pulled at will by the sentry, or arranged so that any one stumbling against a wire stretched between them would cause them to fall automatically. Figs. 5 and 6 show the method of firing a series of lights in succession. On the wire being pulled the loop disengages from the slot as soon as the lever begins to fall; the slack in the wire prevents the two levers being acted upon at once. Figs. 7, 8, and 9 show different methods of firing the light by trip wires. The advantage of No. 9 is that any person coming from the direction of the arrow will fire the light while still some distance behind it.

As regards the lights themselves the "lights illuminating Wreck" referred to in Chap. XI, para. 113 of the Engineering Manual, would doubtless be excellent, if available, though probably too costly for use in company training, &c. A very effective substitute will be found in the Mihtab or Bengal light obtainable from any native firework seller. This is simply a mixture of saltpetre, sulphur and probably meal powder, contained in an earthen saucer and covered with paper.* They cost eight annas and burn for about one minute giving an excellent light for a considerable distance. The time of burning, of course, depends on the amount of composition used. The writer finds it better to get the composition in bulk and use it in the saucers, obtainable in the bazar for about six pies each. These are lighter and can be used several times. A piece of paper pasted over the top and if necessary varnished retains the mixture. The light will burn up quicker if a small portion of the paper under the fuse is cut away, but this is not necessary. The fuse is placed in a small frame (Fig. 1A), the ends resting in the notches and being tied down. The ends of the frame clamp on to the saucer and are tightened by a thumb screw. The frame should not be put together with solder, which would melt. Fig. 10A shows a cover for protection from wet. On the lever being pulled the tongue T is released and the weight W brings the cover back into the position shown in Fig. 10B. Both the tongue and weight are hinged so as to pack up as in Fig. 10C. Experiments, however, go to show that a cover of thin waterproof material, fitted with a draw string which can be fastened over the fuse and saucer after the former is in position, is equally effective besides being simpler and more portable. The waterproof material even though wet, is immediately consumed.

In the R. and C. I. R. A. Meeting held in February last, a special night firing match was arranged to test this device. The scheme was as follows:—Four crouching figures, similar to those used in the

* Saltpetre 4 parts and sulphur and meal powder one part each, is one recipe.

"Running Man" target but stationary were placed 200 yards from the firing point, at intervals of two paces. Standing cover to represent the defensive perimeter of the camp had been prepared. The competing teams were drawn up behind the perimeter lying down, and on the alarm sounding, manned the perimeter. At the same time the flare lights (Mihtabs) which had been placed about 30 yards in front of the targets were ignited by a wire from inside the bivouac. Two lights were fired in succession for each team, and ten rounds allowed; fifteen lights were fired without a single hitch, except that on one occasion, through pulling the wire too hard, two lights were fired at once. The average number of hits for seven teams, counting hits on the figures only and excluding ricochets, was 36, the lowest being 22, and the highest 49. Two other teams made scores of 46 and 40 respectively, the number of rounds in each case being 100.

And now as to the cost of materials. Thirty five-inch lengths of glass tubing, which should be about $\frac{1}{4}$ in. outside diameter, can be bought for annas 8, chlorate of potash is annas 13 per lb., which is sufficient to make hundreds of fuses; sulphuric acid and sugar (white) are equally cheap. The only other things required for their manufacture are a blow lamp (about Rs. 2-12-0 at the Army and Navy Stores), a small file for cutting the glass tubing, a filler (as used for fountain pens) for filling the tubes, and a little cotton wool, paper and paste. The cost of each fuse should not exceed half an anna.

The tubes should be cut into lengths of about 5 inches and one end sealed by holding it in the flame of the blow lamp and turning it round till the orifice is completely closed. When cool, the tubes should be filled about three-quarters full with sulphuric acid, and the other end sealed in the same way. They should now be carefully examined and if not perfectly closed discarded. It will be best to leave them for some hours standing on each end in turn on a piece of paper, when any leakage will be shown by the corrosion of the paper.

A case is now made of a single fold of paper by rolling it on a glass rod, or thick pencil, and gumming the edges. One end is then turned down and sealed. The filled tube is now inserted in the paper case, the precaution being taken of first putting in a little cotton wool to protect the end of the tube, and the space between tube and case filled with chlorate of potash and sugar, which should be first finely powdered, and mixed in about equal proportions. The case should be frequently tapped on the table to settle the mixture down, and when almost full, a little cotton wool put over the top, and the end of the case sealed.

It would be thought that the tubes would be very easily broken, but this is not in reality the case. A 1lb. coffee tin fitted with two tin ledges with separate holes for each fuse and a leather plug on top makes a very convenient case and will hold eighteen fuses. For extra safety the spaces between can be fitted with sawdust: at some recent manœuvres three dozen fuses were carried thus for some days on camels and bullock-carts and no mishap occurred. The mixture is not explosive.

THE BATTLEFIELDS OF NORTH ITALY.

BY LIEUT.-COLONEL THE HON. E. NOEL.

III

ARCOLE.

The two efforts made by Wurmser to raise the siege of Mantua in the summer of 1796 had both failed, and the Feld Marshal himself was now shut up in the fortress with what remained of his relieving army. The Austrian Government had now therefore to look for another commander to relieve Wurmser as well as Mantua. Their choice fell upon Alvinzi, who had been recently engaged in Belgium and had distinguished himself as Chief-of-the-Staff at the battle of Charleroi. This officer, a native of Transylvania, was a veteran of the Seven Years' War and was now over sixty years of age.

His Chief-of-the-Staff was the famous Weyrother who had lately served Wurmser in the same capacity in the Castiglione campaign, and was to figure again at Hohenlinden and Austerlitz. He had served under Clairfayt in his successful operations on the Rhine only the year before and had his lot been cast in the pre-Napoleonic period he might have left a great reputation. It was his misfortune to be opposed to Napoleon.

The summer campaigns had left the Austrian field forces divided one portion under Davidovich being in the Tyrol north of Trent, and the other under Quasdanovich on the north-east confines of Italy. Alvinzi joined the latter and by the middle of October had some 25,000 men ready for an advance. This brought the Austrian field army to about 45,000, besides which there were 25,000 in Mantua, not merely a garrison but a force capable of issuing to take part in the field operations.

Opposed to this total of 70,000, the young French General Bonaparte, now aged twenty-seven, had barely 40,000; the reinforcements received from France had scarcely made up for the waste of war. He was thus forced to remain on the defensive, and for a third time was to be pitted against old and experienced Generals with heavy odds in their favour. His army was composed of four divisions, the 1st under Vaubois was opposed to Davidovich in the Tyrol, the 2nd under Massena was facing Alvinzi, the 3rd under Augereau was in reserve at Verona, while the 4th under Kilmaine was blockading Mantua.

Alvinzi's plan was for himself and Davidovich to advance convergingly on Verona, and after effecting a junction to move on together to deliver Wurmser.

Bonaparte had *one* advantage, one that he well knew how to turn to account, the advantage of a *central position*, and this under *his* management was enough to outweigh all those of his enemies.

A passive defensive did not commend itself to Bonaparte's mind. The plan which he formed seems to have been to throw himself first with all his available force on Alvinzi, and then to march up the gorges of the Brenta and to crush Davidovich in the Tyrol; to repeat in fact, but in exactly reverse order, the course which had led to such success in his September campaign against Davidovich and Wurmser.

Alvinzi, whose corps was formed into two divisions under Quasdanovich and Provéra, was the first to move and reached the river Brenta on the 4th November. By drawing Massena's division back from Bassano and moving Augereau's up from Verona, Bonaparte brought these two together and attacked Alvinzi near the Brenta. Without the garrison which must have been left at Verona, their strength could scarcely have exceeded 15,000 against Alvinzi's 25,000. Although he had considerable success on the right towards Cittadella, he was not able to dislodge Quasdanovich from Bassano, and as this upset his plan of pushing up the Brenta valley, he decided to retire on Verona and to retain all the advantage of a central position.

In the meanwhile Vaubois had been no less unfortunate in the Adige valley, and after fights on the Lavis and in the sombre defile of Calliano, the scene of Bonaparte's victories of the 4th and 5th September, he had been driven back by Davidovich as far as the strong Rivoli position, the same that Massena had held during the summer.

Bonaparte made one more effort against Alvinzi and attacked him on the 12th at Caldiero about nine miles from Verona. There is here a favourable position against an enemy coming from the west, and the difficulties of the attack were in this case increased by a violent storm of sleet from the north-east. This storm blowing in the faces of the French, and the numerical superiority of the Austrians gave success to the latter.

Alvinzi now advanced close to Verona but was very dilatory in his movements, and had formed a project for taking the place by escalade on the night of the 15th with half his force while sending the other half across the Adige towards Mantua.

Thus Bonaparte found himself pressed heavily by superior forces on both flanks, and his communications threatened, while a strong force lay in Mantua in his rear. His own troops had suffered much from their long and arduous campaigning. In a report written by him at this time to the French Government he said:—"The wounded are the *élite* of my army; all our best superior officers and generals are unfit for service; the remnant of the army is exhausted: the heroes of Millesimo, Lodi, Castiglione and Bassano are either dead, or sick in hospital: Joubert, Lannes, Victor, Murat, Charlot, Dupuis, Rampon, Pigeon, Menard, Chabran are wounded: I have still the brave Augereau and the dauntless Massena, but if they fall, what then?"

This was the darkest hour in the early fortunes of this wonderful man. Yet when all seemed lost, he extricated himself by one

of those brilliant strokes that mark true genius. It was Napoleon's habit to study the character and antecedents of his adversaries, and to judge therefrom how to oppose them. Alvinzi was not a new general, and Bonaparte reckoned that a bold stroke aimed at his communications would induce him to retreat. He determined therefore to move down the right bank of the Adige, cross the river at Ronco about 15 miles below Verona and move thence on Alvinzi's rear. This audacious plan led to the terrible three days' battle of Arcole, and once more saved the army of Italy.

Bonaparte did not shrink from running risks, without which he knew success to be difficult. For his proposed enterprise he wanted every man he could get; Verona could not be left without a garrison, yet to leave one would seriously weaken his field force. He counted on the difficulties of exit from Mantua and boldly withdrew 3,000 from the blockading division and brought them with the General Commanding, Kilmaine, to occupy Verona during his absence. To this slender garrison he audaciously risked this large town, the walls of which on the side that faced the Austrian army were about two and a half miles long, and whose total perimeter was more than twice as much. He reckoned on Alvinzi's not knowing how weak the garrison was, and on his own projected move drawing his whole attention to his rear.

On the night of the 14th November, one night earlier than Alvinzi's proposed escalade he issued from Verona on the right bank of the Adige with the whole of Massena's and Augereau's Divisions. Arrived at Ronco on the morning of the 15th he threw a bridge across the river which is here about a hundred yards wide. This was the same spot where he had crossed by boats with Massena's Division on the night of the 10th September previous during his pursuit of Wurmser. He posted a regiment to guard the bridge on the far side, and the cavalry remained on the right bank. From Ronco to S. Bonifacio, on the high road from Vicenza to Verona and the nearest point where the line of the enemy's communications could be reached, is six miles, and this point is itself $12\frac{1}{2}$ miles from Verona. Alvinzi's main forces lay between Verona and S. Bonifacio.

At S. Bonifacio there issues from the hills a torrent called the *Alpone*, which flows on southward and joins the Adige a little below Ronco. This torrent, full after rains, becomes a chain of stagnant pools in dry weather. From the accounts which have come down to us it was evidently unfordable at the time of the battle. It forms with the Adige an angle of about 60° and the ground between them nearly as far up as the high road was a huge morass, quite impassable except on the dykes by which it is crossed here and there.

From Ronco there start two of these dykes, one to the right and one to the left. The latter follows close to the left bank of the Adige, which here makes a considerable bend, and leads through Porcile to the village of Belfiore in the direction of Verona. The

former soon reaches the Alpone and continues up its right bank all the way to S. Bonifacio. The triangle thus formed by the Adige, the Alpone and the dyke is filled by a wood. The small village of Arcole is fully two and a half miles from Ronco, on the left bank of the Alpone, by a bridge over which it is approached. This is the famous "Bridge of Arcole." The village and bridge were held by a detachment of Austrian light troops by whom they had been put into a state of defence.

After crossing the bridge at Ronco, Massena's Division moved along the left dyke, Augereau's along the right. The former drove back an Austrian regiment near the farm Bionde di Porcile and reached the village of Belfiore near the end of the marsh, a distance of nearly four miles, where they met Alvinzi's right column. The latter met with a most obstinate resistance at Arcole, and in spite of his personal leading Augereau was unable to make way on the narrow defile. Bonaparte's anticipations were, however, realised. This sudden and unexpected attack on his rear made Alvinzi abandon all idea of an advance across the Adige or of an attack on Verona: he ordered his trains back towards Vicenza and turned almost his whole force against the new danger, one portion under Provéra being directed on Belfiore, while the main body under Mitrousky moved towards Arcole.

After Augereau's first repulse Bonaparte himself pushed to the front to encourage the French soldiers, and at the same time sent a detachment under Guyeux* to cross the Adige by ferry at Albaredo below the confluence of the Alpone and so to approach Arcole by the left bank.

Bonaparte made a third attempt on the bridge. The fighting here was most fierce. Five French generals were wounded, Lannes three times, and Bonaparte exposed himself with reckless bravery. His A. D. C. Muiron was killed beside him; his horse was thrown into the marsh and he himself left behind in the midst of the enemy, whence he was rescued by the devoted heroism of his soldiers.

It is a tradition of the country that of a whole regiment Bonaparte alone was unwounded, and the saying is that the bullet that could kill Napoleon had not yet been moulded. His survival of this day was indeed a wonder, and the above is a popular way of expressing that death cannot overtake anyone until the destiny reserved for him by Providence has been fulfilled.

Guyeux meanwhile had got across the Adige and his movement up the left of the Alpone combined with Augereau's attacks forced the enemy to abandon the village.

Alvinzi's main body, however, was drawn up in the fields beyond, and Bonaparte did not wish to expose his exhausted soldiers to the attack of fresh troops. Thinking moreover the position, with the marsh behind it, too risky to hold during the night, he withdrew his whole force across the bridge at Ronco, leaving only a guard on

* This brigade had been drawn from the 1st Division at Rivoli.

the further side. The Austrian outposts reoccupied Porcile and Arcole.

The next day the French met the Austrians advancing to attack along both dykes and drove them back. This day's battle was with little variation a repetition of that of the day before; there were the same brave attacks, the same vigorous resistance. Bonaparte lost another A. D. C. and many staff officers, and at nightfall he once more withdrew to his old positions behind the bridge of Ronco.

He was now convinced that the only road to success lay up the left bank of the Alpone, and during the night made preparations for throwing a bridge across the torrent just above its outflow and under cover of the wood.

At the beginning of the third day of this terrible struggle, one of the boats of the bridge at Ronco sank, just as the enemy were advancing to attack. They were, however, driven back by heavy artillery fire from across the river, and as soon as the bridge was repaired Massena and Augereau once more advanced along their respective dykes towards Belfiore and Arcole.

As the main effort was to be by the right, a portion of Massena's Division was placed in reserve inside the wood, while another held the dyke towards Arcole. Augereau's was to cross the torrent, while two battalions were to co-operate on that side from the garrison of Legnago which is only about ten miles below Albarado.

The Austrians from Arcole now made a determined attack on the bridge of Ronco; they were taken in flank by the French troops in the wood and driven into the marshes with heavy loss. Further reinforcements having come down they occupied a new position on the left of the Alpone, where their left flank was covered by a small marsh. Bonaparte now had recourse to a ruse: he sent twenty-five horsemen to fall suddenly on their left rear, sounding the charge on several trumpets at once. At the same time Augereau attacked in front and the detachment from Legnago in their rear, and Massena, making his way by dykes across the great morass, came down on their right. The Austrians assaulted thus on all sides were driven from the field, and making for the high road retreated towards Vicenza. Thus ended this terrible battle, which had lasted through three whole days, during which the Austrians lost 8,000 in killed, wounded and prisoners. The French had 4,500 killed and wounded, about 25 per cent of the force engaged.

This is assuredly one of the most curious battlefields that the world has known. A narrow dyke with a torrent on one side and a gloomy moras on the other. One is at a loss to imagine what induced Bonaparte to choose such a field of action. By throwing a bridge at Albarodo, which is less than two miles from Ronco and below the outflow of the Alpone, he could have moved over solid ground passable by all arms, and could have reached the Austrian line of retreat at, or a little east of S. Bonifacio: the total distance would have been only three miles longer than by the fatal dyke.

It has been suggested that he did not know the country, but this is incredible when we remember how long he had been in this region, and that, in his pursuit of Wurmser in September, to gain the ferry of Ronco he must have passed down this very dyke from Arcole. Another suggestion is that he hoped by the narrowness of the ground to neutralize the numerical superiority of the enemy, but this would be applicable only to a strict defensive. A narrow dyke may do for a Thermopylae, but is not suitable for the attack of a division of all arms, and Bonaparte's move was essentially offensive. It is more likely that his impatience to reach quickly his enemy's line of retreat, and the hope of capturing his trains, led Bonaparte to choose the shorter road: he may not have known that the enemy actually held Arcole, and he may have thought that the dyke of Arcole would not stop the soldiers of Lodi. There was, however, a broad difference between the short bridge over the Adda and the two-and-a-half mile long dyke through this dismal swamp. His persistence on the second day is even more strange, and may be attributed to a dire resolution to do or die, to overcome all obstacles or perish in the attempt.

However this may be, that Bonaparte on this occasion made a mistake is undeniable and this is best shown by the method by which he eventually did succeed on the third day, by crossing to the left bank of the Alpone.

During this time Davidovich had been more dilatory than his chief, and it was only on the second day of the fearful struggle at Arcole that, with his superior force he drove Vaubois from the position of Rivoli, and forced him to retreat over the Mincio at Peschiera. Bonaparte, on hearing this, sent his cavalry to follow Alvinzi eastward and turned with all his infantry on Davidovich, who only saved himself by a rapid retirement to the Tyrol. The news of his lieutenant's success at Rivoli had encouraged Alvinzi to return as far as S. Bonifacio, but Bonaparte again turned upon him and he retreated to the Brenta. Wurmser made a tardy sortie from Mantua on the 23rd November. By this time Kilmaine had come back with his garrison from Verona and was strong enough to drive him back into the fortress.

For the third time now had Bonaparte with an inferior force from a central position baffled the superior but divided forces of his enemies. With his army terribly reduced in strength by death, wounds and sickness, he stood like a lion at bay with one paw ever on that doomed fortress, which he had not the means of capturing, except by hunger.

Peace now reigns in North Italy. Ronco has still its ferry boat as it had then. At Albaredo below, as also at Zeiro above, where Alvinzi had intended to cross, an iron bridge now spans the river. The Adige and Alpone still run their course. The wood near their confluence still exists, and the lower marshes near the river, but the upper marshes near Arcole were drained in 1873 and are now cultivated fields.

Arcole is $3\frac{1}{2}$ miles from the station of San Bonifacio on the Verona-Venice Railway which here runs beside the high road. The bridge over the Alpone at Arcole, one of the most famous in the world, is the humblest and simplest of rustic bridges. Close to it beside the dyke, a stone obelisk with a Latin inscription recalls the memory of Napoleon, and of the terrible struggle where 40,000 French and Austrians grappled so fiercely with one another for three whole days on these narrow dykes.

IV

RIVOLI.

Having failed in his attempt to deliver Wurmser blockaded in the fortress of Mantua, the Austrian Commander Alvinzi, after an interval of rest of less than two months, was ready for another effort in the early days of the year 1797. As before, his forces were divided into two portions, one, the greater, was on the river Brenta whither it had retired after the bloody repulse of Arcole in the middle of November, and the other, the less, was in the Tyrol near Rovereto. His total strength was about 50,000.

His best plan would have been to leave one division of, say, 10,000 to hold the Tyrol and to move direct on Mantua with a strong corps of 40,000, crossing the Adige below Verona. He decided however once more to act on a double line, and this time to direct his main effort from the side of the Tyrol. He entrusted to Provéra the task of moving on Mantua by way of Legnago with a force not exceeding 10,000 men, while about 5,000 more were to make demonstrations on the Adige and threaten Verona. He then brought his centre through the Brenta valley into the Tyrol to join his right and thus collected 35,000 for his principal attack down the Adige valley.

The French army in the Mincio-Adige region was now about 45,000 strong, 10,000 of whom were engaged in the blockade of Mantua, leaving 35,000 to oppose the 50,000 of Alvinzi. Of these, the 1st Division, the strongest, about 10,000, now commanded by Joubert, was on the upper Adige, holding against Alvinzi's right the formidable Rivoli position; the 2nd Massena's was at Verona; the 3rd, Augereau's, on the lower Adige, together about 17,000. Besides these a weak division under Rey was guarding the western side of Lake Garda, and there were some small reserves in central positions.

The campaign was opened by Provéra's advancing from Padua, and on the 9th January he drove the French advanced guard back on Legnago. Now followed a delay of some days in which he was presumably waiting for the co-operation of Alvinzi, and it was not till the afternoon of the 13th that, while making feints at other points, he forced a passage of the river at Angiari a little above Legnago. The circumstances were not unlike those of the previous September on the same ground. As then Bonaparte and Massena

had been unable to overtake Wurmser and prevent him from reaching the fortress, so now Augereau was unable to overtake more than the rearguard, and Provéra arrived outside Mantua at midday on the 15th.

We will now leave these secondary operations to turn to the vastly more important events that had meanwhile occurred elsewhere.

Bonaparte, who all through this period was active in matters of state as well as of war, had been busy with the affairs of central Italy, and was at Bologna when he first heard of the new forward move of the Austrians. With the instinct of a great captain he at once flew to Verona, the central point of his operations, and on arriving there on the 12th he was informed of a conflict on that day with the enemy at S. Michele only just outside Verona, and furthermore during the next day he received news of the first attacks of Alvinzi, which had occurred likewise on the 12th.

With that quickness of decision that was so marked in this great man, he resolved to throw himself with all available force on Alvinzi, and at once ordered Massena's Division from Verona and Rey's from Desenzano to move by a night march to the support of Joubert at Rivoli, whither he also went himself, directing Augereau to maintain a defensive attitude in the plains and to avoid a general engagement.

The former battles in this theatre, Lonato, Castiglione, Bassano, St. George, and Arcole had all been fought on the level plains of North Italy: now, on the other hand, the contest was to be decided in the hills, and Bonaparte was to show himself as skilful in mountain as he had already done in warfare on the plains.

The lake of Garda, nearly forty miles long, and the valley of the river Adige are parallel and lie north and south. The space between them is about seven miles across and is to a great extent filled up by the rugged ridge of Montebaldo, which being over 7,000 ft. high must at this season have been covered with snow down to the valleys.

Near the small town of Ferrara on its eastern slope, at present the starting point for the climb to the summit, and nearly 3,000 feet above sea level there branches off a spur known as Monte Magnone which stretches southward parallel to the main ridge, and on its eastern side, slopes very steeply into the Adige valley. A little south of Ferrara a footpath leads past the chapel of the Madonna della Corona down these steep slopes into the valley near Brentino. At Spazzi, near the Corona, the main ridge and the spur are joined by a neck, south of which the ground slopes down to the valley of Caprino. This valley expands south of the Montebaldo and stretches nearly across the whole space between the lake and the river, and is buttressed by the rugged ground trending abruptly towards the former on the west and the latter on the east.

In this elevated valley there occurs a remarkable feature, a semi-circular range of hills or knolls, starting from the south end of Monte Magnone, which here bears the name of S. Marco, bulging

westward and abutting on the south on Monte Rocca and other high cliffs above the Adige. The semi-circular space thus enclosed is the plateau of Rivoli, about 4,500 yards from N. to S. and 3,500 from E. to W. The stream of the Tasso which rises below Spazzi and waters the Caprino valley, flows in a circular course round this plateau, and then continues its way southward.

Fairly in the centre of the plateau is the little village of Rivoli, on the edge of the cliffs above the Adige. Near the village to the north-east is a hill Monte Castello overlooking the river. The Adige flows in a deep gully, and as the stream wends from side to side it often leaves extensive flats between its bed and the mountains. One such flat is found near Rivoli, but on the further or left bank, above the village of Ceraino. Below this the Adige enters a narrow gorge, with perpendicular cliffs on each side, through which it emerges on to the great plain of Lombardy.

The high road from Trent to Verona runs along the left bank, and at the north entrance to this gorge the passage is effectually closed by the fort of *La Chiusa*, which is Italian for "Shut." There is another road on the right bank, and this, before reaching the Chiusa gorge, leaves the valley and ascends on to the plateau of Rivoli just north of the village and Monte Castello, and afterwards joins the Brescia-Verona road at Castelnova. It will be seen from the above description how difficult it is for an army to debouch this way into Lombardy.

Ever since the French army had come to this region in May 1796, one division had been stationed here, the main position being on the Rivoli plateau and the outposts near Spazzi, Corona and Ferrara. Bonaparte knew the ground well and was aware of the great opportunities that it offered for a weaker to resist a stronger force. It was in fact especially suitable for the tactical application of his great principle of concentration in a central position against a divided enemy, and on this occasion his enemy gave him every chance of practising his favourite method, by which he was now to win a victory more brilliant than any he had won yet.

Alvinzi formed his troops into four main columns: the first, on the right, under Lusignan was to move by mountain paths between Montebaldo and Lake Garda, circle round the French left and attack them in rear: the second, the largest column, under himself, strong in infantry but weak in cavalry and artillery, was to descend by Spazzi into the valley of Caprino and attack them in front: the third under Quasdanovich, with the cavalry and most of the artillery, was to follow the road along the right bank of the Adige, ascend the plateau of Rivoli and attack their right: the fourth, under Wukasso-vich, was to move along the high road towards the Chiusa. The first, second and third columns were separated from one another by rugged and almost impassable ridges, the third and fourth by an unbridged and unfordable river.

On the morning of the 12th January the second column came in contact with the French advanced posts about Ferrara, and Joubert

fearing to be outflanked by the first column retired in good order on the 13th to the plateau of Rivoli, and was continuing his retreat during the night when he received orders from Bonaparte to hold on, upon which he occupied a low ridge which lies about half way between the village and the north edge of the plateau.

It was two o'clock on the morning of the 14th when Bonaparte arrived at Rivoli: the night was clear and his eyes must have fallen on a striking scene; in front frowned the great mass of Montebaldo with its fir-clad slopes clothed with a mantle of snow, while the whole valley below, as well as the heights of S. Marco to the right were resplendent with the camp fires of the Austrians, from which he could satisfy himself that he had judged correctly and that Alvinzi's main army lay before him; on his right, down in a deep valley, "dark as winter was the flow of Adige rolling rapidly." He ordered Joubert to seize the heights forming the northern rim of the plateau and to drive the enemy from S. Marco, while one demi-brigade was to hold the narrow approach from the Adige valley against the enemy's third column.

This Joubert did, and on the Austrians attacking a fierce fight waged along these heights with varying success. The French 14th demi-brigade in the centre held on with great firmness, while both flanks were at times driven back. Massena's Division had meanwhile reached Rivoli, and Joubert, reinforced by a portion of it, was throughout able to maintain himself in advance of the spot where the road from the valley attains the plateau, thus preventing the junction of the enemy's second and third columns.

This last, advancing in great force and supported by the fire of the artillery of the fourth column from the flats across the river drove back the 39th demi-brigade and was debouching upon the plateau in rear of Joubert. This was the critical moment of the battle. Bonaparte now brought up the cavalry and the reserve of Massena's Division, and Joubert swung back his right. Quasdanovich thus attacked in front and on both flanks was driven back in disorder down the narrow road. The defeat of this column was followed by the retirement of the second behind the Tasso, leaving the French masters of the plateau.

While this was going on in the centre and right, the Austrian first column, opposed by only a small detachment of Massena's Division, had wound round the left and succeeded in seizing the heights of Pipolo which form the southern rim of the plateau in rear of the French army, whose destruction they now looked upon as certain. Bonaparte, however, was not disconcerted; knowing that Rey's Division from Desenzano must soon come up, he said, when he saw them crowning these heights, "Those are already our prisoners." They were at once attacked by two demi-brigades of Massena's Division, and being without artillery, and having their retreat cut off by Rey's Division, they were dispersed or taken prisoners.

The winter sun now set on the blood-stained plateau of Rivoli; next day the remains of Alvinzi's column were driven back up the

Tasso valley on Spazzi by Joubert and Rey; one regiment under Murat had been brought across Lake Garda from Salò the evening before to join in the pursuit and cut off the retreat of the enemy. Many perished among the rocky precipices of Montebaldo and Monte Magnone and in desperate flight down the stair-like mountain path of Corona, and large numbers laid down their arms.

It will be remembered that Provéra was moving on Mantua from the east: the news of his passage of the Adige on the evening of the 13th reached Bonaparte the next evening just after the battle of Rivoli. Leaving Joubert, as we have seen, to complete with Rey the defeat of Alvinzi, he started with Massena's Division for Mantua, the same that had marched from Verona the night before, and by gathering up on the way sundry reserve corps, he collected a force of about 10,000 horse and foot at Roverbella, a little north of Mantua, on the 15th.

Provéra, on approaching Mantua, moved to the north side of the fortress in hopes of communicating with Wurmser by the citadel outwork on that side and little thinking that he would there meet French troops who had been engaged twenty-five miles away the day before. The St. George outwork on the east side was in possession of the French. Early next morning, the 16th, Wurmser attempted a sortie but was driven back by the blockading troops. Augereau was now approaching from the east, and Bonaparte came down from the north, spreading his cavalry so as to cut off all retreat to the enemy. Provéra thus enveloped on all sides surrendered with 6,000 men: this was all that remained to him after the battle—called *La Favorita* or *S. Antonio* from farms of those names; his rearguard, overpowered by Augereau on the 14th, had then surrendered with 1,500 men and 14 guns.

After this, the army now in the plains, the Divisions of Massena and Augereau, advanced again to the Brenta, pushing on an advanced guard as far as Treviso just north of Venice, while Joubert's Division in the hills forced the Austrians back north of Trent. The French thus obtained possession of the important cross communication of the Brenta valley, and secured a firm base for a further advance in the spring.

Bonaparte's former victories, at Castiglione in August, Bassano in September, and Arcole in November, had but repelled the enemy who fell back only to come on again. The victory of Rivoli was decisive, and was followed shortly by the fall of Mantua, after which the French took the offensive. Alvinzi's army of 50,000 had been routed and broken up by 35,000. The prisoners amounted to 18,000, besides 60 guns and the killed and wounded must have been 10,000 or 12,000. By his movements on the lower Adige, Alvinzi in this case neutralised a nearly equal number of his enemy, and was able to fall with 35,000 on Joubert's Division of 10,000 at Rivoli, and with an opponent less bold and less quick than Napoleon he would probably have been successful. The activity of the French was wonderful. Bonaparte himself can have had no rest either

the night before or the night after the battle of Rivoli. Massena's Division marched sixteen miles from Verona to Rivoli, and after being engaged all day, directly after the battle made another night march of twenty-five miles to Roverbella. Hence to Mantua is five miles, so that this Division in less than three days marched forty-five miles and fought two battles. Rey from Desenzano marched twenty-three miles to the battlefield on the 14th and continued the pursuit next day.

As Massena left one demi-brigade at Verona, his Division could not have exceeded 7,500, so that Bonaparte had only 17,000 to 18,000, against 35,000 until late in the day, and even with Rey's Division his force cannot have been more than 22,000. More than a century has passed since these events, yet their interest still lives in spite of many more modern battles fought by more numerous armies with recent improvements in arms. It would indeed be hard to find a battlefield more interesting and instructive than that of Rivoli.

Room has been found beside the high road for a railway through the gorge of the Chiusa: the traveller by the modern *train de luxe* as it emerges from this striking defile and crosses the flats from which the cannon of Wukassovich thundered on the French right, can easily see the parish church of Rivoli perched on the cliff above. This humble village is now renowned in history and has given its name to the principal thoroughfare of the gayest capital of Europe.

The Adige, still unbridged, is crossed by numerous ferries. A cyclist riding up from Verona by the great Trent road can cross by one of these and ascend the plateau by the road followed by Quasdanovich's column on the 14th January 1797.

There is perhaps no battlefield in Europe with more marked features than that of Rivoli. From the high ground just north of the village, or the knoll of Zuane a little further north, where Napoleon is said to have stood during the first stages of the battle, one can survey the whole plateau with its rim of heights forming excellent positions and appreciate the value of this natural bastion, into the middle of which debouches the narrow road by which the Austrian third column made its attack. A reserve stationed near the village could easily reinforce any point of the perimeter. How Napoleon's spirit must have revelled in such a situation; how he must have rejoiced at the sight of the divided columns of his enemy, and in his strong natural bastion how confident he must have felt of repelling their disunited attacks.

The road from Rivoli to Caprino, which is the chief town of the valley, leads through the northern heights close past the spot where the 14th demi-brigade displayed such firmness. Among the dales here there is now one of those rifle ranges so popular in Italy. Caprino is connected with Verona by a light railway, which after running for some distance along the Trent road crosses the Adige and approaches the valley of the Tasso from the same direction from which Massena and Rey marched up on the day of the battle. Rivoli is a poor little village, but at Caprino there is good accommodation.

This battlefield unites human art and natural beauty, the art of war with the soft loveliness of a southern landscape. The elevated valley, sloping down on one side to the dark blue waters of the lake and on the other to the grey and rushing river, the natural semi-amphitheatre of Rivoli, with its surrounding and now lightly wooded knolls, the dark ridge of Monte Magnone, the fatal barrier between Alvinzi's two principal columns, and the lofty and rugged mass of Montebaldo, snow capped until late spring and clad with forests of fir, constitute a scene of exquisite beauty, a scene as attractive to the artist as it is to the soldier.

The Castello hill above Rivoli and the heights of San Marco are now crowned by forts, forming part of the frontier defences of Italy. Verona, long an Austrian fortress, is now the headquarters of an Italian army corps, and the historic plateau of Rivoli, erstwhile the scene of strife between two foreign armies on Italian soil, is now a favourite manœuvre ground of the Verona Division of the army of Italy one and independent.



DEAVA



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ESSAY FOR THE 9TH (SECUNDERABAD) DIVISION
PRIZE.*

- (a) The best means of organising Mounted Infantry in peace time in India with a view to its taking the field in efficient units instead of in hastily organised and heterogeneous companies.
- (b) The tactical employment of Mounted Infantry in the field presuming the existence of an efficient and sufficient Cavalry to perform the duties of that arm.

BY MAJOR E. J. M. WOOD, 99TH DECCAN INFANTRY.

In discussing the questions which form the subject of this essay I have ventured to transpose their order, considering that the organisation of Mounted Infantry must be influenced to a large extent by the decision as to the manner of its employment in the future.

Proceeding then to discuss the second question first, it would, I think, be of some assistance in arriving at a correct conclusion as to the proper rôle of Mounted Infantry under the circumstances given to briefly trace the growth and development of an arm, which may be regarded almost as the product of the last thirty years, and the exact position of which, among the well-known and recognised components of an army, is as yet hardly definitely decided.

As long ago as 1835 Mounted Infantry had been employed in South Africa in Sir J. D'Urban's force. In 1843 Sir Charles Napier in his campaign for the conquest of Scinde made use of the camel as a means of conveyance for the infantry accompanying him on his famous march to Iman Ghur. In 1848 Mounted Infantry, in the shape of the Cape Mounted Rifles, formed part of the force which defeated the Boers under Pretorius at Boomplatz. From this battle we gained one of our first lessons in Boer Mounted Infantry fighting. In the Mutiny a detachment of infantry was mounted on camels, and rendered most useful service against the rebels, notably under Sir Hugh Rose at the battle of Kalpi, where they may be said to have saved the situation.

Mounted Infantry does not seem to have been employed in the various expeditions following the Mutiny until that series of operations and campaigns commenced in South Africa which, continuing with but short intervals, finally terminated in the late South African War. South Africa may with truth be described as the birth-place and nursery of Mounted Infantry; it was on

* The essays by Major Wood and Captain Forster were adjudged to be of equal merit. Both are published in this number of the Journal.

her vast plains and boundless uplands that scope was afforded for its wide employment, and in combating her savage and semi-civilised inhabitants its utility was brought home to us. In 1877 a body of Mounted Infantry was raised by Lieutenant Carrington for service against the Kaffirs; it was trained in the duties of reconnaissance, skirmishing and scouting, in addition to that of moving rapidly from point to point, and thus formed the first body of Mounted Infantry, as distinct from merely mobile Infantry. In 1882 a small force of Mounted Infantry was raised at Alexandria under Captain Hutton (now Sir Edward), other small bodies were raised and added to this, they rendered valuable service in the campaign, principally as a support to the Cavalry. In the Soudan Expedition in 1884-85 Camel Corps were formed, having this novel feature that they were partly composed of Cavalrymen, and can therefore hardly be described as Mounted Infantry, though Lord Wolseley took care to issue an order pointing out that their camels were only for transport purposes, and that in the presence of the enemy the riders were to dismount and fight on foot. General Stewart's small force which made the dash across the desert to Metammeh was almost entirely composed of "camelry," as they were sometimes termed. In this campaign the camels were used solely to increase the mobility of the troops, these animals being a means of conveyance especially suited to the country.

Thus, as one small war followed another, Mounted Infantry, wherever the local conditions were favourable, was more extensively employed until again in South Africa, the real country of its origin, it attained a position hitherto undreamt of, entirely subordinating that of the Cavalry, and to some extent that of the Infantry, a position it is scarcely likely to hold again, for it is most improbable that the peculiar conditions, afforded by the nature of the country and the character of the enemy will recur in the future.

For the first time in the annals of the British Army a force of Mounted Infantry (eight companies), organised under a system referred to below, was mobilised as a component of the Army Corps despatched to South Africa in November 1899; this force, however, formed a very small portion of the Mounted Infantry which was eventually organised from Infantry regiments and Colonial Corps, and sent into the field against the Boers. No doubt the idea at the commencement of the war was that Mounted Infantry should be employed with, and act as a support to the Cavalry, this is evidenced by the fact that the eight companies of Mounted Infantry formed part of the Cavalry Division accompanying the 1st Army Corps; but their value as an independent force was speedily recognised, as is shown by the rapid formation of Mounted Infantry brigades.

The brilliant record, given above, of valuable services, rendered under varied conditions, should form an unanswerable argument as to the value of Mounted Infantry as a component of our armies in the future, for reconnoitring and scouting, the service of security and the seizing of strategical points. Its mobility on the battlefield

has proved invaluable; the only question is as to its proper place and duties with other troops in civilised warfare.

Mounted Infantry has never been used in strictly civilised warfare (unless we consider as such the American War, in which the Cavalry closely resembled Mounted Infantry, but in which also the conditions were peculiar), for the reason that England has not been engaged in war with a civilised foe, since she has learnt its value from practical experience; while, in the case of other powers, the nature of the wars in which they have been engaged never having necessitated the creation of Mounted Infantry, they have no direct knowledge of its uses, and consequently do not think any advantage is to be gained from its employment. Not that they have ignored the desirability of rendering some Infantry mobile for Germany, Austria, France, Italy and Switzerland have all experimented, and are still experimenting, in the training and organisation of cyclist companies to act in conjunction with Cavalry.

As long ago as 1872 Hamley in his "Operations of War" advocated the formation of a corps of mounted riflemen for seizing a post or defile more rapidly than could be possible for Infantry and holding it more securely than could be effected by Cavalry, for turning a flank, and for executing distant enterprises against an enemy's communications. It was, however, many years after this that the duties of Mounted Infantry were considered worthy of formal notice in the books of instruction issued by authority, the first mention being that contained in the Drill Book of 1889, where the duties of Mounted Infantry are clearly laid down, but its value for the purposes of reconnoitring and scouting was not fully recognised, either in this book, or in those issued in 1892, 1893, and 1896, or in the hand books for the instruction of Mounted Infantry issued in 1889, 1897, and 1899, though the necessity of instruction in these duties was admitted.

At first sight it may appear curious that this should have been so seeing that it was largely in the duties of reconnaissance that Mounted Infantry had rendered such useful service, but it must be remembered that up to then, where Mounted Infantry had been employed on these duties, it had been so used either on account of the country being unsuitable to Cavalry or owing to the latter not being available in sufficient numbers. The duties of reconnoitring and screening had always been regarded as belonging exclusively to Cavalry, and Mounted Infantry were only to be used for this as a *pis-aller* when Cavalry was not available.

The Boer War doubtless largely modified this opinion, the ability of Mounted Infantry to perform all the duties hitherto pertaining to Cavalry, exclusive of shock action, was clearly proved, so much so that many enthusiasts, failing to recognise the special conditions of the campaign, and the few opportunities for the use of the *arme blanche*, jumped to the conclusion that Cavalry was a thing of the past, sword and lance but "mediæval ironmongery," and that Mounted Infantry properly trained should take its place.

This is not the place to discuss all the arguments put forward, or to attempt to expose the fallacy of their contention.

But the war, besides proving conclusively the capabilities of Mounted Infantry, demonstrated in no less degree the wider possibilities for the employment of Cavalry; far from furnishing an argument for the abolition of that arm it proved that, if given a proper rifle and trained in its use, the Cavalry of the future would be far more efficient than it had ever been in the past, for, not only would its independence and self-reliance be increased, by its ability to protect itself, but it would gain an aggressive power equal to that of the mounted riflemen of the American War, while unlike those riflemen, it would be efficient for shock action.

Inasmuch as we have to discuss the rôle of Mounted Infantry when acting with a force fully provided with Cavalry, it is necessary to briefly consider the action of the latter arm. In so doing the new factor introduced by the arming of Cavalry with an efficient rifle must be taken into account. Until recent times the power and effect of Cavalry acting alone has been regarded as evanescent, and their ability to rapidly seize important points as largely neutralised by their incompetence to hold them; these characteristics made them largely dependent on the support of Infantry, and crippled their efficiency for the purposes of extended raids against an enemy's lines of communications. It was in making good this deficiency and relieving the Cavalry from dismounted fighting, that the principal value of Mounted Infantry was thought to lie; this is clearly shown from the books of instruction already quoted, and also from the fact that hitherto, in the organisation of our Army, Mounted Infantry has been allotted to, and brigaded with the Cavalry.

This is now altered to a great extent, Cavalry owing to their ability to use their rifles with full effect and to act dismounted when necessary, are no longer dependent on the junior arm to anything like the extent they were formerly; they should now, unsupported, be perfectly capable of such extended raids and enterprises as were carried out with such conspicuous success by the mounted troops in the American War, even though opposed by regular Cavalry.

An excellent example of what Cavalry and Horse Artillery, entirely unsupported by Infantry, mounted or otherwise, is capable is afforded by the action at Kameelfontein in February 1900, here French's Cavalry Division, or all of it that was available after the forced march to Kimberley, had arrived just in time to head off Cronje's retreat, and by means of the fire of scarcely more than a thousand dismounted cavalymen, the whole Boer army was stopped for an entire day, and this was while the Cavalry was still armed with a comparatively short ranging carbine.

It may be of interest to quote the comment on this performance from the German account, as showing the trend of opinion in the German General Staff as to the dismounted action of cavalry in the

future :—" This was a very remarkable achievement, and it shows what Cavalry fighting on foot can do when properly used, and of what incalculable value great masses of Cavalry, trained in dismounted action, may be throughout a campaign."

Given an efficient Cavalry as understood nowadays, it may well be asked, what scope is there for the employment of Mounted Infantry in the future, and the question appears to require consideration. An examination of Combined Training 1905, which may be regarded as embodying the latest opinion of the British Army Council as to the respective rôles of Cavalry and Mounted Infantry, may help us to answer the question. It is at once noticeable that the term "Mounted Infantry" is but rarely employed, while the expression "mounted troops" occurs frequently. What is understood by this expression may be gathered from Sec. 117 (1) which says :—"bodies of mounted troops, which may consist of Cavalry, Yeomanry or Mounted Infantry." This section details the action of these "other mounted troops," in the attack, as distinguished from that of the Cavalry proper, which is laid down in Section 116. We may then fairly assume that when the term "mounted troops" is used it means either Cavalry, Yeomanry, or Mounted Infantry, alone or together, and that therefore all the duties prescribed for "mounted troops" can be performed by Mounted Infantry.

Taking these in the order they appear in the book we see that Mounted Infantry may be employed—

(i) To furnish the mounted portion of an Advanced Guard, as distinct from the Independent Cavalry with which, if it exists, it is their duty to keep in touch. (Sec. 58.)

(ii) Similarly with a Flank Guard. (Sec. 61.)

(iii) To perform the important services required of the mounted troops with a Rear Guard. (Secs. 62 and 66.)

(iv) On Outpost Duty to furnish the Outpost Mounted Troops, here again as distinct from the Independent Cavalry, if such exists, between the outposts and the enemy. (Secs. 73 and 74.)

(v) To carry out reconnaissances, (Sec. 97), and to assist the Independent Cavalry as a portion of a large reconnoitring force, when they (Mounted Infantry) are not required for the local protection of the main army. (Sec. 101.)

(vi) In the attack to envelop the enemy's flanks, to protect the flanks of the main attack, and, by their mobility, to enable the commander to turn to account opportunities which he would otherwise be unable to seize, (Sec. 114), to make a feint on the flank it is not intended to attack, to reinforce rapidly Infantry that is hard pressed, to assist the Cavalry in pursuit, and to cover a retreat (Sec. 117.)

(vii) As escorts for Artillery. (Sec. 119.)

(iii) In the defence to occupy temporary positions in order to deceive the enemy as to the exact locality or extent of the battle position—Sec. 125 (4),—to keep a look out beyond the flanks, to keep the Officer Commanding the Reserve acquainted with the

progress of the fight (Sec. 127), to assist in the pursuit after a successful counter-attack—Sec. 136 (2)—and to check the enemy's advance in case of a retreat. (Sec. 137.)

(ix) As part of a force attacking a convoy, and as escorts to convoys. (Secs. 152 and 153.)

It may be protested that Cavalry is equally included in these troops, and equally capable of performing these various duties; this is quite true, but, and here I think lies the solution of the whole question, the Cavalry are required for other important duties, which cannot be efficiently performed by Mounted Infantry alone. Cavalry is best employed in masses, and it is but wasting them to employ them on these various detached duties, which can be as efficiently performed by Mounted Infantry, an arm far less expensive to maintain, and which does not require such high training.

Combined Training—Sec. 101 (1)—hints at what should be the distinctive duties of Cavalry and Mounted Infantry, for it implies that "other mounted troops," *i. e.*, Mounted Infantry, should be utilised for local protection, while the Cavalry should be employed in large bodies for strategical and wide tactical movements. These latter duties (as gathered from Combined Training) are,—to furnish the Independent Cavalry, to carry out important reconnaissances under the direction of the G. O. C., to make wide flanking movements in the attack and take up the pursuit, in the defence to operate against the flanks of the enemy's advance and to assist in the counter-attack and pursuit.

The fact that he has at his disposal a body of Mounted Infantry fully capable of carrying out the duties of protection and reconnaissance connected with his army must relieve the commander of much anxiety, when his Cavalry is perforce absent at a distance, *e.g.*, carrying out a raid on the enemy's lines of communications; while it enables him to give his Cavalry Commander a much freer hand in carrying out his task. A good illustration of this is furnished by the Battle of Gettysburg: General Lee, deprived as he was before the battle of the services of the greater part of his Cavalry, who were engaged under "Jeb" Stuart in raiding the enemy's communications in Maryland, found it most difficult to obtain reliable intelligence or to reconnoitre the country at any distance from the main body, and this lack of intelligence probably contributed to his defeat. In such circumstances a force of Mounted Infantry, in addition to the Cavalry, would have been invaluable, and it is in similar circumstances that Mounted Infantry will find its rôle in the future, though its utility for supplementing (not supporting only) a force of Cavalry engaged on an extensive raid must not be overlooked.

Now with regard to the question of organisation:—Up to the year 1888, although Mounted Infantry had been often employed and tacitly acknowledged as a most useful, if not essential, component of our forces, no attempt had been made by the authorities to organise such a force in time of peace, it being left to the leaders or organisers of any particular expedition or campaign to improvise

there and then such mobile Infantry as they considered necessary for their purpose. In that year orders were issued at Home for the organisation and training of a force of Mounted Infantry in peace time, very much on the lines at present obtaining both at Home and in India, *i.e.*, detachments from Infantry regiments to undergo a course of training lasting two or three months, each section of a company undergoing training being composed of men of the same battalion; in case of mobilisation an infantry battalion was to furnish one complete company.

The causes which led to the adoption of this system were two: firstly, the fear that Infantry soldiers, who are permanently associated with horses, must in the ordinary course of nature, speedily lose their identity as simple foot soldiers, and secondly, the desire to avoid expense.

It cannot be doubted that this system was a great advance in the right direction, and much credit is due to Sir Edward Hutton, to whom its initiation is largely due, but, having regard to what is now required of Mounted Infantry, it cannot be regarded as a satisfactory one. The splendid services rendered by the Mounted Infantry during the Boer War are too well known to need repeating, but the force which was hastily organised on the above system by Lord Roberts before his advance on Kimberley and Bloemfontein rendered very little service at the time when the advance began. To their want of practice in reconnoitring duties may be said to be due the loss of the supply column at Waterval Drift on the 15th February 1900, and the Mounted Infantry under Colonel Hannay permitted Cronje to slip past unperceived, though they had been specially charged with the duty of watching him. That the same Mounted Infantry subsequently rendered such good service is due to the practical knowledge of their duties which they gained in the school of experience, and not to their previous training.

It is not possible for Infantry, however well trained as such, to efficiently perform the duties which we have seen are now expected of Mounted Infantry in the field, unless they have received a very thorough training in such duties in peace time, a training which cannot be properly imparted by few weeks instruction, followed at long intervals by a little practice in riding. The only alternative appears to be the formation of a permanent corps of Mounted Infantry; the first of the two objections noted above is easily disposed of,—if the men be properly officered, trained in the duties of Mounted Infantry only, and armed only with a rifle and bayonet, there need be no fear of their apeing Cavalry.

The other difficulty unfortunately is by no means so easily overcome; we have to seek for a system under which the present expenditure will be little, if at all, increased. The system advocated below for India would, it is hoped, while obviating any large extra expenditure, furnish a really serviceable force ready to take the field fully trained, not numerically very strong, but capable of considerable expansion.

The scheme briefly is this :—to form a permanent force of Mounted Infantry, the recruits for which would be furnished by volunteers from Native Infantry, and from British Infantry regiments serving in India.

Having regard to the nature of the duties now devolving on Mounted Infantry, in which they are not as a rule required to work in large numbers it is considered advisable to retain the company as the administrative and tactical unit. There are at present in India five Mounted Infantry Schools located at Sialkot, Ambala, Fatehgarh, Bangalore and Poona. It is proposed to convert each school into two permanent Mounted Infantry companies, two British and two Native together; this would give four companies to the Northern and Eastern Commands, and two to the Western; if found advisable two more companies might be raised for the Western Command. These companies would then be allotted, in accordance with the scheme published in I. A. O. 768 of 1904, as follows :—One company to each Division of a Command, and one to form a portion of the Corps troops.

The companies would be formed of trained Infantry soldiers, recruited from volunteers from the British and Native Infantry regiments in the Command. The qualifications laid down in para. 952, A. R. I., Vol. II, might still apply, but the men would engage to serve with the Mounted Infantry for a term of two years (this period is considered the least within which a trained infantryman can become a thoroughly efficient Mounted Infantry soldier), or such longer period as might be considered necessary, on the completion of which they would revert to their regiments.

The system suggested for maintaining the units at their prescribed strength (it is proposed to fix this at 80 privates in peace time) is as follows :—To gradually replace the men, whose training is completed, by drafts from regiments, the drafts being regulated so that each company shall be entirely renewed every two years. To accomplish this a Recruit section would be formed of two N.-C. O.'s and 20 men, who would be trained as recruits for six months, and then drafted into the company in place of a similar number reverted to their regiments, a fresh batch of two N.-C. O.'s and 20 men taking their place. In this way each N.-C. O. and man would serve six months with the Recruit Section and eighteen months in the company proper, and a steady flow would be established of men coming from their regiments and returning thereto after serving two years with their company.

There would require to be a slightly different arrangement on the first formation of the company, in order to introduce the regulated flow of men; the following is suggested :—That the whole company, as first formed, should serve for one year, the Recruit Section would be organised six months after the formation of the company, at the end of one year two N.-C. O.'s and 20 men would revert to their regiments, being replaced by those of the Recruit Section, and the half-yearly enlistment of recruits and their transfer to the company would be commenced. Thus of the privates composing the company

on its organisation 20 men would be trained for a year, 20 for eighteen months, 20 for two years, and 20 for two and a half years, but after that every N.-C. O. and man would receive two years' training, *i.e.*, six months in the Recruit Section and eighteen months in the company.

The period fixed for training in the Recruit Section may appear unnecessarily long compared with the total period of service with the company, but it is during this period, when each man can receive individual attention, that the foundation of his training should be laid, his individuality and powers of observation developed in order that he may become a thoroughly trained scout, and a thorough knowledge of horsemastership instilled into him.

It is proposed to do away with the system hitherto prevailing, under which sections of a company are each composed of men of a particular regiment. The men, from whatever regiment enlisted, should be distributed indiscriminately throughout the company, it being impressed on them that, for the time they are with the company, that company is their corps, the honour and name of which they are bound to uphold. To encourage this each company should have some particular badge to be worn on the helmet by all ranks in the company alike, *e.g.*, a piece of panther skin, black buck skin, jungle cock's feathers, etc., no doubt many ideas will suggest themselves.

Though this may appear a trifle, little things of that description go a long way towards creating a feeling of *esprit de corps*, a feeling which the officers should do their utmost to encourage, and thereby engender a feeling of *camaraderie* amongst the men of a company, which would go further than the present system of forming each section out of men of a particular regiment. The group system, advocated in the present regulations, should however be strictly adhered to, the men being permitted to group themselves while serving in the Recruit Section, and so drafted by groups into the different sections of the company at the end of their six months. Any additional companies, formed on mobilisation from the reserves of any company, should receive the same designation as that company, but with a different number, *e.g.*, "The 2nd Company, Ambala Mounted Infantry."

If several companies be employed together they should be brigaded together like the battalions forming a brigade, a senior officer with necessary staff being appointed to command the brigade, or battation or whatever it be called, as a Brigadier commands a brigade, without direct interference with the discipline and interior economy of each company.

The men, trained and reverted to their regiments, to the number of half the strength of the company, should be sent back to their company for a month's training every year out of the drill season, arrangements being made by the Company Commander to provide them with mounts, the men serving with the company thus dismounted being for that period instructed in dismounted duties only. The same men should not be called up for training in consecutive

years. Four officers should be attached to each company, officers of the British Army to British, and officers of the Indian Army to Native companies, for a period of six months each year for instruction in Mounted Infantry duties. It is hardly within the scope of this essay to go into all the details connected with the organisation of a Mounted Infantry company on the lines suggested above, but the following suggestions are put forward tentatively as to the strength and personnel of the company:—

There should be an establishment of officers, and some N.-C. O.'s of each company appointed for fixed periods, irrespective of the periods for which the men are trained; these would be—

Captain Commandant	...	...	1	
Adjutant	...	...	1	
Subalterns	...	...	4	(1 per section)
Colour Sergeant	...	...	1	
Farrier Sergeant	...	...	1	
Shoeing Smiths	...	...	4	
Sergeant	..	.	1	} (as Instructors for the Recruit Sections.)
Corporals	...	...	1	

The company proper would consist of—4 Sergeants, 4 Corporals, and 80 Privates, while the strength of the Recruit Section would be—1 Sergeant, 1 Corporal, and 20 Privates.

Recapitulation:—

Officers	...	Captain Commandant	...	1
		Adjutant	...	1
		Subalterns	...	4
N.-C. O.'s		Colour Sergeant	...	1
		Farrier-Sergeant	...	1
		Sergeants	...	5
		Corporals	...	6
Privates	...	Shoeing-smiths	...	4
"	...	...	...	100

Total of all ranks	123
(including the Recruit Section).	—————

The Adjutant to have charge of the Recruit Section.

In the case of a Native Infantry company the officers would all be British, the remainder all Native. On orders being issued for a company to mobilise, the Recruit Section would be at once drafted into the company, bringing its Field Service strength up to 100 Privates. An officer from another company, not detailed for Field Service, or, if all are detailed, then an officer previously trained with that company, should proceed at once to take over the dépôt with its equipment, etc. As many officers, N.-C. O.'s and men as are considered necessary under the special circumstances of the mobilisation, would be at once called up from the "reservists" of the company, indents would be submitted to the Remount Department for

the number of remounts required, the establishment for training remounts, as at present laid down being increased to such extent as might be necessary. The officer in charge of the depôt would be responsible for the issue of remounts, equipment, etc., to the "reservists," and for the preparation and despatch of both, either as a complete company, or, as required, to replace losses in the field.

The advantages claimed for this scheme are—

Firstly (perhaps the most important):—That the increase of expenditure would not be great.

Secondly:—That, while taking from regiments no more men than is contemplated under the present system, it would provide a force, thoroughly trained in those more important and difficult duties now demanded of Mounted Infantry, ready to proceed immediately on service.

Thirdly:—That, instead of Mounted Infantry units "taking the field in hastily organised and heterogeneous companies," and with but a very insufficient training, they would do so in units formed of men, who had been fully trained to work together, under officers whom they know, and by whom they had been instructed.

Fourthly:—That it would provide an efficient "reserve" from which to maintain the units at full strength on Field Service, and by means of which the comparatively small force maintained in peace time could be immediately largely augmented.

ESSAY FOR THE 9TH (SECUNDERABAD) DIVISION PRIZE.

BY CAPTAIN G. N. B. FORSTER, ROYAL WARWICKSHIRE
REGT., ASST. COMMANDANT, MOUNTED INFANTRY
SCHOOL, BANGALORE.

- (a) "The best means of organising Mounted Infantry in peace time in India with a view of its taking the field in efficient units instead of in hastily organised and heterogeneous companies."

The experiences gained in the late South African War have proved clearly that the present proportions and organisation of Mounted Infantry will no longer suffice for the requirements of future wars. It is still very questionable in the minds of many whether Mounted Infantry are of any material use; they argue that "the Cavalry establishment should be increased, and the work of Mounted Infantry performed by it," but this surely is a mistaken idea, for if Mounted Infantry are properly organised and efficiently trained, they are only "*mobile*" Infantry, and in no way is their rôle on the field of battle a substitute for that of Cavalry. The Cavalry have a distinct rôle of their own to perform, and cannot, nor in fact ever will, have the time to do the work of mobile Infantry.

Before approaching the subject of how Mounted Infantry can be best organized in peace time with a view to its taking the field in efficient units, it would be as well to give a short précis of how it is trained, and organised for service, in India under the present regulations. There are five Schools of Instruction for the training of soldiers in Mounted Infantry duties, *viz.*, at Poona, Ambala, Fatehgarh, Sialkot and Bangalore; at the last named only British Troops are trained, at the others British and Natives are trained alternately during the year. Four* classes, each lasting two and a half months, are trained annually. Before the commencement of each class, a regiment is detailed to send one or more sections for training; after the completion of the course, the men are reported upon and returned to their regiments. Every year those who have been through a course, or otherwise have obtained a certificate, are required by the present regulations to carry out a further training of ten days with either a Cavalry or Artillery unit.

When Mounted Infantry are required for active service regiments are again called upon to supply sections of men who have had the above, only too short, training. Mounted Infantry

* This year the classes have been altered to two classes of four months each. The intervals between the classes are utilised for "refreshing classes."—[Ed., Journal, U. S. I.]

cannot be thoroughly efficient to take the field in time of war if organised under the present system, which involves taking officers and men who have done but a short training at some school of Mounted Infantry, and patching parties together to form companies. The majority of these men would have been trained some years previously and probably have never mounted a horse nor had any practice in Mounted Infantry duties since that time. For instance, when Mounted Infantry were organised for service in Somaliland, one company was despatched which consisted of four sections from four different corps, and I think I am right in stating that one of these sections, to bring it up to its proper strength, had men from yet another corps drafted into it. With few exceptions the company consisted of N.-C. O.'s and men who had only just completed a "two and a half months'" training at a school of Mounted Infantry; under such circumstances, it is hardly surprising that when this heterogeneous mass at first takes the field there should be a certain amount of chaos.

This patch work after a few months on service no doubt works together and becomes useful but in the meantime there is an absence of efficiency. Tenacity is one of the great essentials of Mounted Infantry, and this cannot be attained under the present system of insufficiently trained dribblets from various corps, unknown to one another, being formed into companies on the eve of taking the field; men in every other branch of the service in peace time are continually trained and practised in the particular rôle which they will have to fill in time of war; why not, similarly organise *permanent* companies of Mounted Infantry so that they can be trained in like manner. If Mounted Infantry are considered necessary in time of war, and are to be of any use, they must be efficient when called upon to take the field and I suggest this could be effected.

(a) If the Infantry arm is considered sufficiently numerous—by two companies of each battalion being equipped as Mounted Infantry and supplied with suitable ponies—these companies always to work as Mounted Infantry, the two companies should not be taken *in toto* and formed into mounted companies, but men should be selected from the whole battalion, and they should be of light weight, intelligent, active, quick and good shots.

The advantage of maintaining Mounted Infantry companies as part of a battalion of Infantry instead of forming Mounted Infantry battalions would be that the men of these mounted companies would always be in touch with their primary duties, *i.e.*, their rôle as Infantrymen; if a man did not take an interest in this portion of his work or showed no aptitude for mounted work, he could at once be relegated to one of the other companies, and a more suitable man put in his place; in this way, I think every man would be kept efficient as an Infantryman and the same time would learn how to take care of and make use of his mount for the purpose for which it is intended.

Another advantage would be that recruits for the Mounted Infantry would not be required to be especially enlisted, as would be the case if Mounted Infantry battalions were formed; they in the first instance should join their battalion as they do at the present time, and when passed as thoroughly proficient in all their duties as Infantrymen, then and not till then should they be drafted into the more mobile companies of their battalion.

This system would do away with all schools of Mounted Infantry so soon as battalions had sufficient officers, N.-C. O.'s, and men trained to form two companies as suggested, because each officer in command of the Mounted Infantry companies should be then held responsible for the training of a certain number of officers, N.-C. O.'s and men yearly for the purpose of filling up the vacancies which would occur from time to time.

In peace time, the filling up of the vacancies in the Mounted Infantry companies from the remaining companies of their battalion would in no way disturb the latter, but in the field (active service) the casualties would in all probability increase to such an extent that the gaps caused could not be filled up by the battalion except to the detriment of the latter, therefore I suggest that the strength of a Mounted Infantry company in peace time should be 125 of all ranks and in war 100; thus one section of 25 of all ranks would be left on mobilisation as a reserve for the purpose of—

- (1) Filling up gaps caused by the strain of war.
- (2) Training men and ponies so that the company in the field can always be maintained up to strength.

The one argument which naturally arises against the company system is that ponies cannot be kept in every station where Infantry may be quartered, or it may be that the ground is not suitable for the working of mounted troops, but in such cases the battalion should still keep the equipment of the mounted companies on its charge, and when it relieves a regiment in a station at which there are ponies, the former takes over the ponies and line gear but the latter still retains its equipment, saddlery, etc., etc. The Mounted Infantry companies of a battalion may under the above circumstances have no ponies for two or three years, but still this is better by far than forming companies for active service of men who have in most cases never ridden a horse for *many* years. By the new reorganisation scheme troops are being concentrated and there would be few stations where it would not be possible to work mounted troops.

This proposed organisation might appear at first sight to reduce the numbers of the Infantry arm, but in reality it is only converting one-fourth of that arm into "*mobile*" Infantry which after all must be a great advantage to it.

(b) If Infantry are not considered to be sufficiently numerous—two extra companies can be added to each battalion, so that each battalion would consist of eight companies and two "*mobile*" companies.

Now as to how these companies are to be taken on field service.

When a brigade of Infantry is formed, we will say of four battalions, there will be eight companies of Mounted Infantry accompanying it, *i.e.*, if formed together they would make two battalions of Mounted Infantry of four companies each. One battalion is at once available for the Brigadier to employ, and the remaining four companies can still remain with their own units at the disposal of the unit commander; for example, should the battalion commander be ordered to detail the escort for the Field Artillery, he has a mobile company to send with them instead of a 'Foot' company (if I may use the term) which cannot possibly keep up or be far enough in front or to the flanks of a battery to be of any real use to it from a protective point of view. When two brigades are combined to form the Division, the battalion of Mounted Infantry of each brigade is available for the Divisional Commander to use for any purpose he may think fit, such as—"a support to the Cavalry," or "as the mounted troops of the advanced guard." By these two battalions being sent with the Cavalry the Divisional Commander is not entirely deprived of "mobile" Infantry as there is still the one company of Mounted Infantry with each battalion of each brigade.

It may be said that this does not alter the present system as regards the intermixture of the Mounted Infantry but I contend that the tactical unit of Mounted Infantry under all circumstances *i.e.*, in peace time and in the field) is the company, and that it does (not matter if a battalion is composed of four companies from four different corps, but it does matter if each company is formed of sections from many different corps.

In my opinion, the great advantage of the above organisation over the formation of separate and complete battalions of Mounted Infantry would be that the officers and men would always remain in touch with their primary duties as Infantrymen, whilst in the latter case, they might and probably would in course of time try to ape the Cavalry and thereby become useless Cavalrymen, in efficient Infantrymen and indifferent Mounted Infantrymen.

In order that Mounted Infantry may be successfully used on the field of battle, they must be trained as such in peace time; and to prevent wastage in horseflesh they must be taught how to look after their mounts, and I think this can be carried out by the asystem of organization suggested. It may no doubt somewhat increase the "army expenditure," but on the other hand economy and efficiency cannot always go hand in hand.

(b) **"The tactical employment of Mounted Infantry in the field presuming the existence of an efficient and sufficient Cavalry to perform the duties of that arm."**

"Reconnoitring and Scouting" is undoubtedly the rôle of the Cavalry nevertheless the Mounted Infantry have their share, and an important one, in reconnaissance, that is, supporting the Reserves of the Cavalry

extended in advance, holding defiles, bridges, and commanding tactical features, covering the retreat of the advanced squadrons if driven in, and with the help of the Cavalry supports denying the enemy any chance of breaking through in quest of information concerning the main body.

If Mounted Infantry accompanying the Cavalry were judiciously employed, they would set free the Cavalry, for their highly important and harassing duties of reconnoitring, from all anxiety as regards the sufficiency of the support in their rear. Again, in a reconnaissance in force, Mounted Infantry might suitably be employed in place of Infantry, thereby lessening the disadvantage of employing foot soldiers in an advanced position from which when once engaged it is so difficult to withdraw them.

In fact, in reconnaissance the Cavalry and Mounted Infantry are best used in combination. Small bodies of Mounted Infantry should accompany the Cavalry patrols for the purpose of relieving the latter of the duty of passing back information gained. In spite of reconnoitring being the special duty of the Cavalry, Mounted Infantry must be taught this duty as they may be required to perform it in a minor way when employed with flank guards, outposts, etc., etc.

In an advanced guard, the main guard should be composed chiefly of Mounted Infantry or "mobile" Infantry which can thus act closely in support of the vanguard of Cavalry and if required assist in pushing aside any attempts of the enemy to delay the main columns. If Mounted Infantry are always at hand to support the reconnoitring Cavalry when they are checked, the advance of the main bodies should be little interrupted; on the other hand, if the Cavalry be suddenly driven in and timely notice be sent back, the Mounted Infantry would be able to take up an advantageous position to cover their retirement, and would also (owing to their mobility) be far enough in advance of the main columns to prevent them being surprised and to give the Infantry of the advanced guard time to deploy.

In the case of the advanced guard following up a retreating enemy who is holding successive positions, the Mounted Infantry should attempt either to outflank these positions so as to cause the enemy to vacate them and thus not delay the advancing columns, or to cut off the enemy's rear guard should an opportunity occur. Cavalry having in the first instance seized all points of vantage, from which the force could come under the fire of the enemy occupying them, they should be relieved by the Mounted Infantry of the main guard and the latter should hold these gained positions until relieved by the Infantry in rear. These points of vantage are so far ahead of the line of march as a rule that it necessitates the employment of mounted troops, acting for the most part on foot, and would therefore appear to be the rôle of Mounted Infantry.

On account of the increased range and accuracy of modern fire-arms, the distance at which flank guards must move from the main body is much

Flank Guards.

increased and the employment of Mounted Infantry on the duty will greatly relieve the Infantry.

Another duty would be to reconnoitre and seize all positions outside the line of march, too distant to be held by Infantry and which, if occupied by the enemy and left untouched, would be a danger to the main column.

Among the many important services, which the Mounted Infantry can render to their brothers on foot, who after all are the most important part of an army, perhaps the one, which is of most prominence, is that of covering their retreat and securing them from loss at the hands of their pursuers. They are of extraordinary value in the retirement of a beaten army, because of the confidence and feeling of security which is given if the duty of the Mounted Infantry is efficiently performed, *viz.*, to hold on to a position to the last minute, until the Infantry have got out of range or are able to take up another defensive position.

Of times to make safe the retreat of the main column through some defile, or over some other obstacle, the rear guard must hold on to a position with such tenacity, as to require in the final retirement a mobility that is possessed by "*mobile*" Infantry but not by Infantry.

When the position of the enemy has been located by the Cavalry, and an attack is decided upon, the Mounted Infantry should be brought forward to secure the advance positions gained until the Infantry relieve them, then they should be concentrated on the flanks of the attack to counteract the efforts of the mobile troops of the defence to hamper the direct advance by outflanking movements; also to seize advantageous positions on the flanks of the defence, thereby weakening the defensive centre, or by bringing a heavy enfilade fire to bear on the enemy causing him to evacuate the position. In modern wars, positions will be of such a lengthy character that mobility will be very necessary if the flanks of the defence are to be turned, and here will lie the great value of Mounted Infantry in being able to transfer quickly to the decisive point, and to a greater distance, their immense fire-power of Infantry.

Should the attack be successful, Mounted Infantry ought to be sent forward in support of the pursuing Cavalry, to break up any formed bodies of the enemy's Infantry that may attempt to check the pursuit, to drive out the enemy from any positions he may try to hold. This is the duty of the Infantry and not that of the Cavalry arm, the latter being free to hang on the enemy's flank so as to be prepared to push home the pursuit vigorously at the least sign of wavering on the enemy's part. On the other hand, should the attack fail, the Mounted Infantry can join the Cavalry and Artillery in covering the retirement of the Infantry as explained under the duties of Mounted Infantry in rear guards.

The Russo-Japanese War has shown us that the length of defensive positions in future wars will be immense, and from what

one can gather from the reports of the many battles fought, one cannot help thinking that had the Japanese army had a large force of mobile Infantry available, they would probably have turned their enemy's flanks in a shorter time, and have inflicted greater loss in the pursuit. For example, in the opinion of the writer, had a strong force of Mounted Infantry been pushed forward on the flank of the Russian position before Liaoyang, the fight would not have lasted as long as it did, and the result would have been more disastrous to the Russians. At the battle of the Yalu, it would appear that Mounted Infantry might have been with advantage employed against the left flank of the Russians, in spite of the rugged nature of the country.

In the defence, Mounted Infantry will be found as useful as in

Defence. the attack, perhaps more so, in taking up positions to check the advancing enemy, and to cause him to deploy earlier than he wished and thereby show his dispositions prematurely, by harassing his flanks from advantageous positions during his advance to the attack. In the position itself they will be of great assistance, being employed on the flanks, thus lengthening out the position, and making the turning movements of the enemy lengthy and laborious in face of the defence and perhaps under its fire. Again, if a force of mobile riflemen be retained with the reserves, any portion of the lengthy defence can be readily reinforced at the threatened point, or the flanks can be quickly extended or thrown back to face the turning movement, and thus convert it into a frontal attack. And lastly, if the position must be evacuated they can hold on to it until the slower moving Infantry have made good their retreat.

The opportunity for counter-attacks is often so momentary that it depends on the rapid concentration of a force at a certain place, and if this moment is not to be missed, this manœuvre can only be carried out by mobile troops who have the fire-power of Infantry. Even if the force for the counter-attack is already concentrated, it must be transferred quickly to the desired point, and this can be carried out, as a rule, with more success by Mounted Infantry than by Infantry.

Counter-attack. Outposts are essentially the duty of Infantry, but at the same time no force can be said to be securely protected unless extensive patrolling is carried out between the several portions of the outpost line, and also beyond that line, and for this patrolling to be carried out to such a distance to the front as to be of material use, "mobile Infantry" should be used. The "Combined Training" regulations lay down that Mounted Troops can be used with outposts as follows:—

- (a) By day as observation posts in front of the main line ;
 - (b) Attached to outpost sections for patrolling purposes ;
 - (c) Occasionally to hold a part of the main position ;
- besides all this, it lays down that connection should be kept between the outposts and the advance Cavalry,—this is without doubt one of

the duties of the Mounted Infantry. The distance at which outposts nowadays will have to be from the main column, is so great, that the outpost Infantry would with advantage be augmented by Mounted Infantry.

An important duty of the Mounted Infantry would appear to be that of acting as escort to the Field Artillery arm, by carefully reconnoitring the country immediately in front of the advancing batteries, by covering the batteries when they come into action, and by holding positions from which the enemy's rifle fire could be brought to bear on them when in motion, by warding off attacks and receiving the charges of the hostile cavalry directed against the flanks of the guns, by covering them and keeping the enemy at a distance when the guns are changing position or retiring.

The great fire-power of Mounted Infantry when a battery is stationary, combined with their mobility when a battery is in motion, would seem to indicate that they are eminently fitted for this very important duty. As regards the escorting of convoys, their duties would come under what has already been described under the heading of Advanced, Flank, and Rear Guards.

For the efficient protection of lines of communications where no means of rapid transfer of troops are available, such as railways, steam boats, etc., mobility is of vital importance. The frequent patrolling between posts on the line would be very welcome to Infantry if performed by them and is certainly not a part of the Cavalryman's rôle, but should be delegated to the Mounted Infantry.

For foraging in the enemy's country and raiding his lines of communications, Mounted Infantry would be of great assistance to the Cavalry to support them in case of attack by the enemy's Infantry, and to cover their retreat when necessary, for example, if Mounted Infantry had been present with the Russian Cavalry on the return from their raid on the Japanese lines near Nankowang they would have been able to engage the Japanese Infantry and allowed the cavalry to retreat in order.

The foregoing appear to the writer as some of the more important duties on which Mounted Infantry can be employed in modern warfare, there are other minor duties such as relieving the Cavalry from mounted orderly duties, etc. The *raison d'être* of Mounted Infantry after all lies in the necessity of being strongest at the decisive point of a battle, and rigid rules cannot be laid down for its tactical employment in war but its place on the battlefield is where a preponderance of rifle fire is required to be quickly transferred and where it would be impossible to bring up or transfer in the time less mobile troops. They should only be detailed to duties where they can fight *en pied*, their means of conveyance being only used for the purpose of carrying them to the place of combat rapidly and for increasing their usefulness by their mobility combined with the fire-power of Infantry.

THE HIGHER TRAINING OF THE REGIMENTAL SCOUT.

BY LIEUTENANT R. D. ALEXANDER, 2-3RD GURKHA RIFLES.

From time to time, there have appeared, in the pages of this Journal and other military papers, articles describing various systems for the training of the Regimental Scout. Such a system was described by me in the October number of this Journal in 1904. By its means a comparatively large number of men could be trained simultaneously for the ordinary duties of a scout. No attempt was made to specialise among the scouts themselves, because, when a large number of men are trained together, a general average of efficiency is the only obtainable standard.

It should be borne in mind, however, that scouting may be more than the glorified hide and go seek, that one sees so often indulged in on manœuvres. **Need for higher training.** The infantry scout in the hills must play the part of the cavalry scout in the plains, that is to say, he must be trained and equipped to do good work, when separated by two or three days' march from his main body.

To do such work he must possess a working knowledge of many things not required when scouting regimentally. This knowledge may be imparted to the British soldier with comparatively little trouble, but with the native soldier considerable difficulty and a long course of training must be expected. It will, therefore, be necessary to specialise among the scouts themselves, and select from among them for further training, men who appear especially fitted by intelligence and physique for higher training.

The organisation of the scouts differs to a certain degree in every regiment. As a fairly common number it is assumed that the scouts consist of eight N.-C. O.'s and sixty-four men. From these men it should be possible to select all N.-C. O.'s and thirty-two men for higher training. These selected men are called "A" scouts, the remainder "B" scouts. "A" scouts should, so long as they remain qualified, be classed as "A" scouts for a period of five years. "B" scouts should be changed as often as necessary, and reorganised every year after the commencement of the furlough season. If an "A" scout is likely to be away from his corps for a period exceeding four months, he should be relieved by a "B" scout. The "B" scout will revert to "B" scouts on return of the "A" scout, unless better qualified. In this case the "A" scout should be transferred to "B" scouts or to the ranks.

The "A" and "B" scouts of a regiment having been trained together on some approved system for a period of from sixty to ninety working days, the "A" scouts should continue their training alone. **First training.**

ESSAY FOR THE 9TH (SECUNDERABAD) DIVISION PRIZE.

BY CAPTAIN G. N. B. FORSTER, ROYAL WARWICKSHIRE
REGT., ASST. COMMANDANT, MOUNTED INFANTRY
SCHOOL, BANGALORE.

(a) "The best means of organising Mounted Infantry in peace time in India with a view of its taking the field in efficient units instead of in hastily organised and heterogeneous companies."

The experiences gained in the late South African War have proved clearly that the present proportions and organisation of Mounted Infantry will no longer suffice for the requirements of future wars. It is still very questionable in the minds of many whether Mounted Infantry are of any material use; they argue that "the Cavalry establishment should be increased, and the work of Mounted Infantry performed by it," but this surely is a mistaken idea, for if Mounted Infantry are properly organised and efficiently trained, they are only "*mobile*" Infantry, and in no way is their rôle on the field of battle a substitute for that of Cavalry. The Cavalry have a distinct rôle of their own to perform, and cannot, nor in fact ever will, have the time to do the work of mobile Infantry.

Before approaching the subject of how Mounted Infantry can be best organized in peace time with a view to its taking the field in efficient units, it would be as well to give a short précis of how it is trained, and organised for service, in India under the present regulations. There are five Schools of Instruction for the training of soldiers in Mounted Infantry duties, *viz.*, at Poona, Ambala, Fatehgarh, Sialkot and Bangalore; at the last named only British Troops are trained, at the others British and Natives are trained alternately during the year. Four* classes, each lasting two and a half months, are trained annually. Before the commencement of each class, a regiment is detailed to send one or more sections for training; after the completion of the course, the men are reported upon and returned to their regiments. Every year those who have been through a course, or otherwise have obtained a certificate, are required by the present regulations to carry out a further training of ten days with either a Cavalry or Artillery unit.

When Mounted Infantry are required for active service regiments are again called upon to supply sections of men who have had the above, only too short, training. Mounted Infantry

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cannot be thoroughly efficient to take the field in time of war if organised under the present system, which involves taking officers and men who have done but a short training at some school of Mounted Infantry, and patching parties together to form companies. The majority of these men would have been trained some years previously and probably have never mounted a horse nor had any practice in Mounted Infantry duties since that time. For instance, when Mounted Infantry were organised for service in Somaliland, one company was despatched which consisted of four sections from four different corps, and I think I am right in stating that one of these sections, to bring it up to its proper strength, had men from yet another corps drafted into it. With few exceptions the company consisted of N.C. O's and men who had only just completed a "two and a half months" training at a school of Mounted Infantry, under such circumstances, it is hardly surprising that when this heterogeneous mass at first takes the field there should be a certain amount of chaos.

This patch work after a few months on service no doubt works together and becomes useful but in the meantime there is an absence of efficiency. Tenacity is one of the great essentials of Mounted Infantry, and this cannot be attained under the present system of insufficiently trained dribbles from various corps, unknown to one another, being formed into companies on the eve of taking the field; men in every other branch of the service in peace time are continually trained and practised in the particular role which they will have to fill in time of war; why not, similarly, organise permanent companies of Mounted Infantry so that they can be trained in like manner. If Mounted Infantry are considered necessary in time of war, and are to be of any use, they must be efficient when called upon to take the field and I suggest this could be effected.

(a) If the Infantry arm is considered sufficiently numerous, by two companies of each battalion being equipped as Mounted Infantry and supplied with suitable ponies, these companies always to work as Mounted Infantry, the two companies should not be taken out of, and formed into, mounted companies, but men should be selected from the whole battalion, and they should be of light weight, intelligent, active, quick and good shots.

The advantage of maintaining Mounted Infantry companies as part of a battalion of Infantry instead of forming Mounted Infantry battalions would be that the men of these mounted companies would always be in touch with their primary duties as Infantrymen, if a man did not take an interest in this portion of his work, or showed no aptitude for mounted work, he could at once be relegated to one of the other companies and a more suitable man put in his place; in this way I think every man would be kept efficient as an Infantryman and the same time would learn how to take care of, and make use of, his mount for the purpose for which it is intended.

Another advantage would be that recruits for the Mounted Infantry would not be required to be especially enlisted, as would be the case if Mounted Infantry battalions were formed; they in the first instance should join their battalion as they do at the present time, and when passed as thoroughly proficient in all their duties as Infantrymen, then and not till then should they be drafted into the more mobile companies of their battalion.

This system would do away with all schools of Mounted Infantry so soon as battalions had sufficient officers, N.-C. O.'s, and men trained to form two companies as suggested, because each officer in command of the Mounted Infantry companies should be then held responsible for the training of a certain number of officers, N.-C. O.'s and men yearly for the purpose of filling up the vacancies which would occur from time to time.

In peace time, the filling up of the vacancies in the Mounted Infantry companies from the remaining companies of their battalion would in no way disturb the latter, but in the field (active service) the casualties would in all probability increase to such an extent that the gaps caused could not be filled up by the battalion except to the detriment of the latter, therefore I suggest that the strength of a Mounted Infantry company in peace time should be 125 of all ranks and in war 100; thus one section of 25 of all ranks would be left on mobilisation as a reserve for the purpose of—

- (1) Filling up gaps caused by the strain of war.
- (2) Training men and ponies so that the company in the field can always be maintained up to strength.

The one argument which naturally arises against the company system is that ponies cannot be kept in every station where Infantry may be quartered, or it may be that the ground is not suitable for the working of mounted troops, but in such cases the battalion should still keep the equipment of the mounted companies on its charge, and when it relieves a regiment in a station at which there are ponies, the former takes over the ponies and line gear but the latter still retains its equipment, saddlery, etc., etc. The Mounted Infantry companies of a battalion may under the above circumstances have no ponies for two or three years, but still this is better by far than forming companies for active service of men who have in most cases never ridden a horse for *many* years. By the new reorganisation scheme troops are being concentrated and there would be few stations where it would not be possible to work mounted troops.

This proposed organisation might appear at first sight to reduce the numbers of the Infantry arm, but in reality it is only converting one-fourth of that arm into "*mobile*" Infantry which after all must be a great advantage to it.

(b) If Infantry are not considered to be sufficiently numerous—two extra companies can be added to each battalion, so that each battalion would consist of eight companies and two "*mobile*" companies.

Now as to how these companies are to be taken on field service.

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It may be said that this does not alter the present system as regards the intermixture of the Mounted Infantry, but I contend that the tactical unit of Mounted Infantry under adverse circumstances, i.e., in peace time and in the field, is the company, and that it does not matter if a battalion is composed of four companies from four different corps, but it does matter if each company is formed of sections from many different corps.

In my opinion, the great advantage of the above organization over the formation of separate and complete battalions of Mounted Infantry would be that the officers and men would always remain in touch with their primary duties as Infantrymen whilst in the latter case they might and probably would in course of time, try to ape the Cavalry and thereby become useless Cavalrymen and Infantrymen and inefficient Mounted Infantrymen.

In order that Mounted Infantry may be successfully used in the field of battle they must be trained as such in peace time, and to prevent wastage in horseflesh they must be taught how to look after their mounts, and I think this can be carried out by the system of organization suggested. It may no doubt somewhat increase the army expenditure, but on the other hand certainly and efficiently corrects two great and inherent

4) "The tactical employment of Mounted Infantry in the field presuming the existence of an efficient and sufficient Cavalry to perform the duties of that arm."

Reconnoitring and Supporting, as well as doing the work of the Cavalry, inverts as the Mounted Infantry have their share and an important one in reconnaissance, that is supporting the Reserves of the Cavalry

extended in advance, holding defiles, bridges, and commanding tactical features, covering the retreat of the advanced squadrons if driven in, and with the help of the Cavalry supports denying the enemy any chance of breaking through in quest of information concerning the main body.

If Mounted Infantry accompanying the Cavalry were judiciously employed, they would set free the Cavalry, for their highly important and harassing duties of reconnoitring, from all anxiety as regards the sufficiency of the support in their rear. Again, in a reconnaissance in force, Mounted Infantry might suitably be employed in place of Infantry, thereby lessening the disadvantage of employing foot soldiers in an advanced position from which when once engaged it is so difficult to withdraw them.

In fact, in reconnaissance the Cavalry and Mounted Infantry are best used in combination. Small bodies of Mounted Infantry should accompany the Cavalry patrols for the purpose of relieving the latter of the duty of passing back information gained. In spite of reconnoitring being the special duty of the Cavalry, Mounted Infantry must be taught this duty as they may be required to perform it in a minor way when employed with flank guards, outposts, etc., etc.

In an advanced guard, the main guard should be composed chiefly of Mounted Infantry or "mobile" Infantry which can thus act closely in support of the vanguard of Cavalry and if required assist in pushing aside any attempts of the enemy to delay the main columns. If Mounted Infantry are always at hand to support the reconnoitring Cavalry when they are checked, the advance of the main bodies should be little interrupted; on the other hand, if the Cavalry be suddenly driven in and timely notice be sent back, the Mounted Infantry would be able to take up an advantageous position to cover their retirement, and would also (owing to their mobility) be far enough in advance of the main columns to prevent them being surprised and to give the Infantry of the advanced guard time to deploy.

In the case of the advanced guard following up a retreating enemy who is holding successive positions, the Mounted Infantry should attempt either to outflank these positions so as to cause the enemy to vacate them and thus not delay the advancing columns, or to cut off the enemy's rear guard should an opportunity occur. Cavalry having in the first instance seized all points of vantage, from which the force could come under the fire of the enemy occupying them, they should be relieved by the Mounted Infantry of the main guard and the latter should hold these gained positions until relieved by the Infantry in rear. These points of vantage are so far ahead of the line of march as a rule that it necessitates the employment of mounted troops, acting for the most part on foot, and would therefore appear to be the rôle of Mounted Infantry.

On account of the increased range and accuracy of modern fire-arms, the distance at which flank guards must move from the main body is much

Flank Guards.

increased and the employment of Mounted Infantry on the duty will greatly relieve the Infantry.

Another duty would be to reconnoitre and seize all positions outside the line of march, too distant to be held by Infantry and which, if occupied by the enemy and left untouched, would be a danger to the main column.

Among the many important services, which the Mounted

Rear Guards.

Infantry can render to their brothers on foot who after all are the most important part of an army, perhaps the one, which is of most prominence, is that of covering their retreat and securing them from loss at the hands of their pursuers. They are of extraordinary value in the retirement of a beaten army, because of the confidence and feeling of security which is given if the duty of the Mounted Infantry is efficiently performed, *viz.* to hold on to a position to the last minute, until the Infantry have got out of range or are able to take up another defensive position.

On times to make safe the retreat of the main column through some defile, or over some other obstacle, the rear guard must hold on to a position with such tenacity, as to require in the final retirement a mobility that is possessed by "mobile" Infantry but not by Infantry.

When the position of the enemy has been located by the

The Attack.

Cavalry, and an attack is decided upon, the Mounted Infantry should be brought forward to secure the advance positions gained until the Infantry relieve them, then they should be concentrated on the flanks of the attack to counteract the efforts of the mobile troops of the defence to hinder the direct advance by outflanking movements, also to secure advantageous positions on the flanks of the defence, thereby weakening the defensive centre, or by bringing a heavy rifle fire to bear on the enemy causing him to evacuate the position. In modern wars, positions will be of such a lengthy character that mobility will be very necessary if the flanks of the defence are to be turned and here will be the great value of Mounted Infantry in being able to transfer quickly to the decisive point, and to a greater distance, their immense fire power of Infantry.

Should the attack be successful Mounted Infantry ought to be sent forward in support of the pursuing Cavalry, to break up any formed bodies of the enemy's Infantry that may attempt to check the pursuit, to drive out the enemy from any positions he may try to hold. It is the duty of the Infantry and not that of the Cavalry arm, the latter being free to hang on the enemy's flank so as to be prepared to punish the pursuit vigorously at the least sign of weakening on the enemy's part. On the other hand should the attack fail the Mounted Infantry can join the Cavalry and Artillery in covering the retirement of the Infantry as expected under the duties of Mounted Infantry in rear guards.

The Russo-Japanese War has shown us that the length of defensive positions in future wars will be immense, and from what

one can gather from the reports of the many battles fought, one cannot help thinking that had the Japanese army had a large force of mobile Infantry available, they would probably have turned their enemy's flanks in a shorter time, and have inflicted greater loss in the pursuit. For example, in the opinion of the writer, had a strong force of Mounted Infantry been pushed forward on the flank of the Russian position before Liaoyang, the fight would not have lasted as long as it did, and the result would have been more disastrous to the Russians. At the battle of the Yalu, it would appear that Mounted Infantry might have been with advantage employed against the left flank of the Russians, in spite of the rugged nature of the country.

In the defence, Mounted Infantry will be found as useful as in the attack, perhaps more so, in taking up positions to check the advancing enemy, and to cause him to deploy earlier than he wished and thereby show his dispositions prematurely, by harassing his flanks from advantageous positions during his advance to the attack. In the position itself they will be of great assistance, being employed on the flanks, thus lengthening out the position, and making the turning movements of the enemy lengthy and laborious in face of the defence and perhaps under its fire. Again, if a force of mobile riflemen be retained with the reserves, any portion of the lengthy defence can be readily reinforced at the threatened point, or the flanks can be quickly extended or thrown back to face the turning movement, and thus convert it into a frontal attack. And lastly, if the position must be evacuated they can hold on to it until the slower moving Infantry have made good their retreat.

The opportunity for counter-attacks is often so momentary that it depends on the rapid concentration of a force at a certain place, and if this moment is not to be missed, this manœuvre can only be carried out by mobile troops who have the fire-power of Infantry. Even if the force for the counter-attack is already concentrated, it must be transferred quickly to the desired point, and this can be carried out, as a rule, with more success by Mounted Infantry than by Infantry.

Outposts are essentially the duty of Infantry, but at the same time no force can be said to be securely protected unless extensive patrolling is carried out between the several portions of the outpost line, and also beyond that line, and for this patrolling to be carried out to such a distance to the front as to be of material use, "mobile Infantry" should be used. The "Combined Training" regulations lay down that Mounted Troops can be used with outposts as follows:—

- (a) By day as observation posts in front of the main line;
- (b) Attached to outpost sections for patrolling purposes;
- (c) Occasionally to hold a part of the main position;

besides all this, it lays down that connection should be kept between the outposts and the advance Cavalry,—this is without doubt one of

the duties of the Mounted Infantry. The distance at which outposts nowadays will have to be from the main column, is so great that the outpost Infantry would with advantage be augmented by Mounted Infantry.

An important duty of the Mounted Infantry would appear to be that of acting as escort to the Field Artillery arm, by carefully reconnoitring the country immediately in front of the advancing batteries, by covering the batteries when they come into action, and by holding positions from which the enemy's rifle fire could be brought to bear on them when in motion, by warding off attacks and receiving the charges of the hostile cavalry directed against the flanks of the guns, by covering them and keeping the enemy at a distance when the guns are changing position or retiring.

The great fire-power of Mounted Infantry when a battery is stationary, combined with their mobility when a battery is in motion, would seem to indicate that they are eminently fitted for this very important duty. As regards the escorting of convoys, their duties would come under what has already been described under the heading of Advanced, Flank, and Rear Guards.

For the efficient protection of lines of communications where no means of rapid transfer of troops are available such as railways, steam boats, etc., mobility is of vital importance. The frequent patrolling between posts on the line would be very wearisome to Infantry if performed by them and is certainly not a part of the Cavalryman's rôle, but should be delegated to the Mounted Infantry.

For foraging in the enemy's country and raiding his lines of communications, Mounted Infantry would be of great assistance to the Cavalry to support them in case of attack by the enemy's Infantry, and to cover their retreat when necessary, for example, if Mounted Infantry had been present with the Russian Cavalry on the return from their raid on the Japanese lines near Newchwang, they would have been able to engage the Japanese Infantry and allowed the cavalry to retreat in order.

The foregoing appear to the writer as some of the more important duties on which Mounted Infantry can be employed in modern warfare, there are other minor duties such as relieving the Cavalry from mounted orderly duties, etc. The *raison d'être* of Mounted Infantry after all lies in the necessity of being strongest at the decisive point of a battle, and rigid rules cannot be laid down for its tactical employment in war, but its place on the battlefield is where a preponderance of rifle fire is required to be quickly transferred and where it would be impossible to bring up or transfer in the time less mobile troops. They should only be detailed for duties, where they can fight "*on foot*," their means of conveyance being only used for the purpose of carrying them to the place of combat rapidly, and for increasing their usefulness by their mobility combined with the fire-power of Infantry.

THE HIGHER TRAINING OF THE REGIMENTAL SCOUT.

BY LIEUTENANT R. D. ALEXANDER, 2-3RD GURKHA RIFLES.

From time to time, there have appeared, in the pages of this Journal and other military papers, articles describing various systems for the training of the Regimental Scout. Such a system was described by me in the October number of this Journal in 1904. By its means a comparatively large number of men could be trained simultaneously for the ordinary duties of a scout. No attempt was made to specialise among the scouts themselves, because, when a large number of men are trained together, a general average of efficiency is the only obtainable standard.

It should be borne in mind, however, that scouting may be more than the glorified hide and go seek, that one sees so often indulged in on manœuvres. The infantry scout in the hills must play the part of the cavalry scout in the plains, that is to say, he must be trained and equipped to do good work, when separated by two or three days' march from his main body.

Need for higher training.

To do such work he must possess a working knowledge of many things not required when scouting regimentally. This knowledge may be imparted to the British soldier with comparatively little trouble, but with the native soldier considerable difficulty and a long course of training must be expected. It will, therefore, be necessary to specialise among the scouts themselves, and select from among them for further training, men who appear especially fitted by intelligence and physique for higher training.

The organisation of the scouts differs to a certain degree in every regiment. As a fairly common number it is assumed that the scouts consist of eight

Organisation.

N.-C. O.'s and sixty-four men. From these men it should be possible to select all N.-C. O.'s and thirty-two men for higher training. These selected men are called "A" scouts, the remainder "B" scouts. "A" scouts should, so long as they remain qualified, be classed as "A" scouts for a period of five years. "B" scouts should be changed as often as necessary, and reorganised every year after the commencement of the furlough season. If an "A" scout is likely to be away from his corps for a period exceeding four months, he should be relieved by a "B" scout. The "B" scout will revert to "B" scouts on return of the "A" scout, unless better qualified. In this case the "A" scout should be transferred to "B" scouts or to the ranks.

The "A" and "B" scouts of a regiment having been trained together on some approved system for a period of from sixty to ninety working days, the "A" scouts should continue their training alone.

First training.

The "A" scouts should be trained with a view to making them capable of working entirely alone and to performing all the duties of reconnaissance with clearness and accuracy. The knowledge required to carry out a thorough reconnaissance is the essential point of this higher training, but other points are included, which, it is believed, will render them more proficient and self-reliant.

The various stages of this training are tabulated for sake of clearness and will be discussed in detail later. They are:—

- (1) To read and write in the Roman character and if possible in English.
- (2) Semaphore signalling.
- (3) Military sketching (*i.e.*, all points of map reading and making).
- (4) Road sketching and road reports.
- (5) A working knowledge of the stars.
- (6) Estimation of the volume of streams, measurement of the depth of fords, etc.
- (7) Swimming, rafts, and boats.
- (8) Hasty demolition of bridges, railways, etc.
- (9) First aid.
- (10) (In the case of two or three men) speaking Pushtu.
- (11) Estimation of the supplies procurable.

The above are arranged with a view of making the training as progressive as possible. All training to be thoroughly useful must be a slow and steady progression from one point to another. Each exercise is intended to train up the brain and the intelligence to battle with the difficulties of the next.

It is not considered necessary that all the men should be proficient in every point. For exercises Nos. (1), (2), (5), (7) and (8) all men should be required to be proficient. For exercises (3) (4) and (6) all N.-C. O.'s and eight men; for (9) one N.-C. O. and four men; for (10) two men; for (11) one or two men (if sufficiently capable). These numbers should allow of the whole having between them a sufficient number of men trained on all points to ensure the best work under any ordinary difficulties. The various points of training are now discussed in detail.

For this part of their training the scouts should be handed over to the regimental Schoolmaster for as long a time daily as he can spare. They can also be taught by a writer or babu. As soon as they are fairly proficient, they should start semaphore for an hour a day. This will help them in their reading and writing and vary the monotony of too much clerical work. Semaphore is essential for the proper working of scouts as otherwise communication among the scouts themselves can only be kept up by very considerable labour and loss of time.

Every man must be kept at these two exercises until he is proficient. Some men will, of course, learn quicker than others. These men should not be kept

(1) **Reading and writing in the Roman character.**

(2) **Semaphore.**

back but should, if suitable, be selected for learning sketching. They will start with the rudiments of this work as soon as sufficient men can be considered as proficient in exercises (1) and (2).

The training of the scouts must now for a short time branch off into various channels. All men not required for special work should continue at semaphore and Roman characters. In teaching the selected men military sketching the services of a trained surveyor can be advantageously employed. It must be remembered that at first only very easy and practical methods should be adopted. The supervising officer must see that the instruction is not too technical and that the men have a thoroughly practical comprehension of what is required of them. Any attempt at hurrying will result in a mere parrot-like knowledge, and a blind adherence to rules, which will sooner or later result in chaos and confusion. The trained surveyor is generally too slow and exact for military sketching and the scouts must not be allowed to drop into too slow methods of sketching. Accuracy should as far as possible be insisted on, but at the same time slow and methodical work has little value from a military point of view, because men in the vicinity of an enemy will have very little opportunity, and what chances do occur for sketching must be utilised as rapidly as possible.

Road sketching will present very little difficulty to men trained in map making. Special stress must be laid on the report work. The native is usually verbose in the extreme, especially when describing anything. Only essential information cut down to a minimum is required, and this and this only must be insisted upon.

Most natives have a fair working knowledge. This item of training should require little time. It is only necessary to see that all men have a working knowledge. It is to be understood, that the scouts have compasses and that the men trained in sketching know how to use them.

While the sketching class is going on the next eight or ten men should be taught to gauge streams. The method is described in the Military Engineering Manual. This knowledge is necessary for any useful report on camping grounds, and the method is very simple. Making a section of a ford or gap presents little difficulty and men very soon pick it up. A road report is hardly complete without one, and such information is very useful to a commander of a mixed force, who can then know beforehand what work, if any, is needed to get his force across. The men should also know the span of the various military bridges, so as to be able to give accurate information if a bridge is needed. The Non-Commissioned Officers as soon as they have mastered their sketching work should not take long to learn this part of their training.

It is absolutely necessary that all scouts should be fairly good swimmers. They must also know how to construct a rough raft and the boat described in the January number of this Journal. Without this knowledge they would constantly be held up in a well-watered country, and would be continually wetting their rifles and accoutrements.

(7) **Swimming, rafts, etc.** All scouts should have a knowledge of hasty demolitions. Many native corps have at one time or other built lines or made roads, and will, therefore, know how to use blasting powder. Instruction regarding the method of placing the charge and other technical points should be systematically carried out. The men will take great interest in it, and the importance of this knowledge cannot be overrated. A small body of daring men, accustomed to the hills, and possessing good explosives, would probably be able to do very serious damage to a civilised enemy in time of war.

The scouts being left entirely to their own resources, a few men should be carefully trained to render first aid in simple cases. They should attend at the hospital and always be present when cases of sprains or cuts are being treated. They should be well trained in bandaging and should be supplied with bandages and a few simple medicines. These they will carry in their kits, which will be detailed later.

(8) **Hasty demolitions, railways, bridges, etc.** It may be assumed that some day, we may have to fight in a Pushtu speaking country. Even supposing that the inhabitants are not actively hostile any body of men unable to speak the language of the country must be seriously handicapped. Attaching men of other regiments and possibly of different castes is to be deprecated in this instance. Work entailing great danger and necessitating great daring is not helped by introducing outsiders, however loyal those outsiders may be. Perfect confidence and reliance in each other is absolutely essential if any number of men are required to work in danger and difficulty in perfect unison. It would, therefore, seem advisable that a few men should be able to speak Pushtu. If one or two really intelligent men were attached to regiments, preferably of their own caste, on the frontier, several months' hard work should give them sufficient working knowledge.

(9) **First aid.** This work entails so much local knowledge and experience that it is very doubtful if any very satisfactory result could be obtained. In time, with careful work, one or two men might be found, whose work would give useful results and particular attention might be given them with a view to improving them as much as possible.

(10) **Pushtu.** It is not to be expected that, under the system suggested or possibly under any other, any very great result could soon be obtained. Careful work and steady attention might make our thirty-two men capable as a whole in two years. At the end of

(11) **Estimation of supplies procurable.**

that period, when the work had settled down and the training been thoroughly systematised, a steady improvement might be expected.

Once the theory is accepted, that highly trained scouts are a necessity, the inevitable fact must be faced, that specialism in their training is required. A man once selected and possessing this knowledge will consider himself superior to his comrade in the ranks and should be treated as such. It is only too often the custom to treat scouts as ordinary soldiers in Cantonments, and to give them extra work on manœuvres and field days. This is too great a tax on a man's loyalty and devotion to duty, and if anything like the above knowledge is required of him, it is more than probable that he will soon become disgusted. In short we are confronted with the irrefutable maxim, that men cannot be expected to do more and harder work than their fellows without an equivalent, that is, either more pay or more privileges. All the world over the best way of getting work well done is to make it worth the workers while to do it well. It is therefore advocated that the "A" scouts should receive certain privileges. The privileges which would seem most acceptable are:—

- (1) Exemption from all guard duties so long as the nights in bed permit of it without hardship to other men;
- (2) Exemption from all fatigues.
- (3) The right to shoot in a Government forest for a few days every year without payment. (This is also good for the men's scouting.)
- (4) One pair of boots and one pair of putties annually or their equivalent in money.

One or two of the above privileges would be sufficient to make the scout's lot one to be desired by others. It is also suggested that the "A" scout should be officially designated "scout;" this is a very small matter but would be greatly appreciated by the men themselves.

The scout being now mentally and physically trained to act by himself, it is necessary to dress and equip him in the best manner. He must be equipped to move easily and freely, but at the same time he must be well armed and able to carry several days' rations. Of his dress by far the most important part would appear to be his boots and foot bandages. A foot sore man is a useless impediment to a fast moving body.

The boot now usually given to native troops is excellent in its way and marvellously cheap; but at the same time there is no doubt that sore feet occur to a very distressing extent from their use without foot bandages or in rough and hilly country. When, as very often happens, the native shoe of the man is unquestionably sound, he might be allowed to wear it. When the shoe is not serviceable boots should be made to fit the men and particular attention paid to them.

Above the boot putties are usually worn. Putties are very serviceable and have many times shown their good qualities. At the same time I venture to

Leg gear.

state, that a puttie is vile wear in spear grass, and very irksome in sand, when the sand works through. They are very uncomfortable when wet, and do not dry readily, unless taken off. They have also been known to come loose at a critical moment. A close fitting canvas gaiter coming well down over the boot and made of durable canvas would seem a good serviceable article. It dries quickly, is impervious to spear grass, and cannot come down at the wrong moment.

Above the gaiter or puttie comes a loose pair of knicker-bockers or football shorts. If shorts are worn a stocking-

Breeches.

ette should be worn from about half way up the calf and folded down over the gaiter or puttie. At night time the folds are turned up over the knee and the end of the shorts. This obviates the greatest disadvantage of shorts, namely, the effect of a cold wind at night.

Coat.

Above the shorts the man should wear a loose blouse or Norfolk Jacket.

Head Dress.

On his head a wide-awake or puggri.

The man's dress having been discussed it is time to consider his equipment. The following articles of kit

Equipment.

seem necessary :—

- (1) Rifle and bayonet.
- (2) A havresack.
- (3) If a Gurkha a khukri, if not, a short hunting knife.
- (4) A water bottle.
- (5) A ruk sack.
- (6) The Austrian Army Rifle sling or one like it.

The ruk sack is an indispensable adjunct to the scout's kit. In it he should carry (a) rations for several days

Ruk Sack.

in aluminium tins, two days' rations in each tin. These tins should be as air-tight as possible and made deep enough to be used as cooking pots, (b) water bottle, (c) one cape or blanket. If the cape is waterproof then every other man might carry a cape and the others a blanket, (d) a warm woollen jersey, (e) any sketching apparatus used, (f) eighty rounds of ammunition.

The havresack should be made of strong waterproof canvas.

Havresack.

In this the scout will carry the actual day's ration and seventy rounds of ammunition. It will be worn not as usual over the right shoulder but over the left and will hang at the right side.

The bayonet and khukri (or hunting knife) will be carried on a

Bayonet and knife or khukri.

strong canvas sling over the right shoulder and will hang on the left side.

Over the havresack sling and khukri sling will be fastened a broad canvas retaining strap. On this strap

Retaining strap

will be worn a compass by those scouts who are supplied with them.

The Austrian Army Rifle Sling would appear an almost indispensable article of equipment for a scout. No scout should, at any time, place his rifle on the ground, he must, therefore, if unprovided with a sling put it on his back in the usual manner, if he wants to use both hands for something else. When a rifle is slung across the back, it takes not a little time to get it off again. The Austrian Army Sling is extremely simple and the rifle can be detached from it in a second. The sling would be hung over the right shoulder so that the rifle hangs butt foremost on the left side.

It has been thought necessary to provide the scout with a khukri or hunting knife, because there must be occasions, when he will want a weapon, which is swift and silent.

The scouts' equipment is made of strong canvas, and is, therefore, as light as possible. They should also be supplied with two good telescopes, several pairs of binoculars and about eight watches. The arrangement of the kit has been devised with a view to distributing the weight as equally as possible on both shoulders.

The regimental scout, trained and equipped more or less in the manner indicated, should be ready to take the field entirely trusting to his own resources. It is admitted, however, that the idea of detaching men from a regiment in this manner is open to grave objections. No regiment on service should be expected to spare more than eight Non-Commissioned Officers and thirty-two men. Scouting must, therefore, be carried on by the combined efforts of several detachments. So long as these detachments are drawn from men of the same class, little harm is done, but if the classes are mixed, an element of uncertainty and lack of confidence is at once introduced. It would seem, therefore, that the time has come to consider the advisability of forming a corps of highly-trained scouts, totally independent of battalions, who would thus maintain their battle strength unimpaired. When we consider the vital importance of the cavalry screen in the plains, it is surely not too much to believe that a body of infantry would be equally useful in the hills, if employed in the same manner. If this body was a compact and distinct unit its working value would be materially increased, and the fact, that it was a properly organised force, would inspire a confidence in its reports, which those of a force formed of detachments of varying merit would seldom obtain.

Conclusion.

THE TRANSPORT SERVICE IN INDIA.

BY MAJOR R. E. VAUGHAN, ASSISTANT QUARTERMASTER-GENERAL
FOR TRANSPORT.

The permanent transport. The Transport Service in India has two main Divisions—

The Organised Transport.

The Unorganised Transport.

The organised transport is again sub-divided into two portions—

- (a) That which is maintained at full strength, ready for immediate war service.
- (b) That which is in cadre or skeleton formation, and which must be expanded by a considerable addition of animals and personnel before it is ready to equip troops for service in the field.

Special transport for war. In addition to the above there are the corps and trains, chiefly of bullock and camel transport, which have no permanent peace nucleus, but will be raised and equipped on mobilisation under a system, partly of registration, partly of provisional contracts with headmen of camel-owning tribes, which are chiefly destined for employment on lines of communication for the transmission of stores and supplies from the base to the army in the field.

Units of the permanent establishment. The transport under (a) consists of four mule corps for use with cavalry brigades; 17 pack mule corps for use with infantry divisions; 121½ half-troops of army transport and siege train bullocks, for slow-moving field hospitals, ordnance field parks, and heavy batteries with their ammunition columns.

The skeleton transport under (b) consists of 3 mule cadres for cavalry brigades; 15 pack mule cadres for infantry divisions; 2 pony cart train cadres for service with divisional supply columns operating as a connecting link between the brigade supply columns with divisions in the field and the leading advanced supply depot of the line of communications; 9 silladar camel corps and 4 corps of grantee camels, for the equipment of troops.

Character of the Indian transport. It may here be observed that the Indian transport is primarily maintained for war, not for purposes of peace; were it only necessary to provide for the latter, it would be cheaper to use the local transport of the country by hiring as required. While every effort is directed to finding full and remunerative work for it in time of peace, the ultimate object of all transport administration in India is the perfection of arrangements for its efficiency in war.

As the result of recommendations made by the Adjutant-General's Committee of 1904 there is in progress a revision of the field service equipment tables the consequences of which will be—

Revision of transport arrangements for war.

- (a) A reduction in the numbers of followers taken with units on service.
- (b) A reduction, in certain cases, of scales of baggage and equipment
- (c) The division of transport into first and second line.
- (d) The provision for the carriage of rations in brigades is as follows:—

1. *With Cavalry*—2 days' rations on first line transport.
2 days' rations on second line transport.
3 days' rations in brigade supply columns.

First line transport consists of pack mules.

Second line and brigade supply column transport, of mule carts.

2. *With Infantry*—3 days' rations in the second line.
4 days' rations in brigade supply columns.

With infantry the first line transport consists of pack mules: the second line and brigade supply columns transport, of camels, mule carts only being used as second line transport for the cavalry units and the small-arms and mountain artillery ammunition columns with the divisional troops. Provision is also made for the carriage in brigades of 3 days' grain for all animals with the force.

In addition to the transport spoken of above there are a certain number of mules, the property of Government, serving with mountain batteries, pioneer battalions, companies of Sappers and Miners, and regiments in possession of Maxim gun equipment, which are regimental transport for carriage of special equipment, and which are not available for use to meet the general needs of an army.

Each silladar regiment has also 89 Government mules lent to it in peace for grass operations, with 89 attested Government grass-cutters, who, though paid by the regiment, receive in addition deferred pay from the Government at the expiry of their period of attestation at the rate of 8 annas per mensem for the full term of their service. On a general mobilisation the 89 mules with a portion of the attendants are used as first line transport of regiments forming part of the field army; the balance of these attendants, and all the 89 mules and their special attendants of regiments not detailed for the field army, are surrendered to the transport service to assist in the expansion of the mule cadres. Certain changes in this system are, however, under consideration.

Silladar cavalry grass mules.

The silladar camel corps are, as their name implies, organised on the silladar system, with chanda and other corps funds administered by the

Silladar camel corps.

Commandant in exactly the same manner as in a silladar cavalry regiment. Their Commanding Officers, Native Officers and Non-Commissioned Officers are drawn from the native cavalry, the former being seconded for a term of office varying from two to five years, and the latter being permanently drafted into the transport service after completing a year of approved service on probation, when they are struck off the rolls of their regiment, but retain their privileges as soldiers in the matter of pension and leave rules. Strictly speaking, the silladar camel corps are not wholly silladar; the surwans only are true silladars, owning their own camels and equipment, while the supervising staff (though they are allowed to have a certain number of barghirs in proportion to their rank) and the veterinary and artificer personnel, are Government servants in the same way as the personnel of mule corps. The silladar corps have been classed as cadre or skeleton transport because they do not stand immediately ready for war; only one-third of the camels of a corps are assembled at a time at headquarters, the rest being away, trading privately or at their homes on unemployed pay, which is granted at one-third of the rate of employed pay, *i.e.*, pay while present at headquarters. Hence these units are not capable of being fully mobilised until the unemployed camels have been called in from outlying places, an operation which takes 10 to 15 days to effect. In the 12 months of each year each batch of one-third of the corps establishment serves for 4 months on employed pay and 8 months on unemployed pay. All the surwans are, however, attested and all the camels borne on the rolls of the corps.

The grantee camel corps are located in the Chenab Canal Colony. Each owner is allotted a square of land, approximately 27 acres in extent, on condition that he continuously maintains one approved camel for the service of Government whenever it may be required. Each approved camel is branded, and they are grouped into corps. When required for peace operations they are entitled to one month's notice to assemble at headquarters, which is reduced to 15 days' warning when the call involves mobilization for active service. The operations are controlled by a Transport Registration Officer from the complement of the Supply and Transport Corps, who has under him one Native Officer, one Quartermaster-Dafadar, and one Veterinary Dafadar for each of the four corps with a small menial establishment for the care and custody of a reserve of camel gear held in store at Lyallpur, his headquarters. In the charge of this equipment he is assisted by the Quartermaster-Dafadars while the rest of the native staff are available to move about the district watching the whereabouts and condition of branded, registered camels, giving veterinary assistance when necessary, and keeping the Registration Officer in touch with the general run of affairs. The corps are called up annually, generally in January or February, for fifteen days' training; for the carrying out of this training an officer with a native supervising staff is detailed from a native cavalry regiment to each camel unit.

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If the corps are required for manœuvres of troops, work with troops up to fifteen days is reckoned as training, so that only the cost of embodiment for a period beyond fifteen days becomes a charge against divisional manœuvre grants. It will therefore be seen that, like the silladar camel units, these grantee corps, although their full establishment of camels is branded and registered in corps rolls, are not available for immediate service with troops and are therefore classed as cadre transport whose complete equipment and concentration, involves an appreciable period of delay.

The unorganised transport consists principally of mules, and is that portion of the complement of transport which is allotted to the requirements of special services, chiefly frontier garrisons, the troops in which were not reckoned as part of the field army, although standing in constant readiness to move out for local and temporary warlike operations. In course of time with the reduction in strength of these special garrisons, and in consequence of the reorganisation of the field army, it has become unnecessary to lock up so many animals for these special purposes, and from time to time mules have been withdrawn from the exclusive service of these particular garrisons, as the latter were abolished or reduced, and been attached to mule cadres to assist in completing their expansion for war.

The Indian transport has hitherto been classified as "A" and "B" complement; the former being transport generally available for divisions of the field army, the latter for special and miscellaneous services.

With the evolution of a reorganised and enlarged field army, having a reduced scale of equipment and followers, the time has arrived to reconsider the organisation of a transport service whose units are now too large and unwieldy for the proper and economical service of brigades in the field, and the whole question has been dealt with by a Committee sitting last summer at Army Headquarters under the presidency of the Quartermaster-General in India. It is, however, premature to allude to their recommendations until the subject has been dealt with by the Commander-in-Chief.

The basis of transport organisation is the section, from which is built up the system of half-troops, troops and sub-divisions that combine to form the transport corps or train.

The sections vary in strength in different organisations and consist of—

- 12 pack mules;
- 10 draught mules or ponies;
- 12 Government bullocks
- 10 bullocks in trains raised on mobilisation;
- 12 camels;
- 25 hired or purchased pack bullocks or donkeys,
- 24 hired or purchased pack mules or ponies.

The half-troops are in turn composed of varying numbers of sections in different organizations.

In a cavalry brigade mule corps—

5 sections form a draught half-troop.

3 sections form a pack half-troop.

In a pack mule corps, and in bullock units—

4 sections form a half-troop.

In a pony cart train and in camel units—

5 sections form a half-troop ;

In all organisations two half-troops form the full troop.

The sub-divisions are again variously constituted the details being given fully in Table VII of Army Tables, Transport. This diversity of organisation means a complexity in the interior economy of transport units which there should be no difficulty in simplifying, and it is hoped that in any future organisation of transport it will be possible to reduce the present differences so that both pack and draught half-troops of mule, pony and bullock units may consist of four sections, each of 12 animals, the camel organisation being retained as at present.

The carrying power of these organisations is as follows :—

In draught transport all mule and bullock carts carry 10 maunds, or 2·8 cart loads to the ton. In flat country for ordinary peace duties bullock carts carry 12 maunds. A section of 12 pack mules carries 22 maunds, and one animal is spare and unloaded. Of this weight 21 maunds are troops equipment, and 1 maund transport corps equipment and stores. A useful calculation may here be given. To ascertain what number of pack mules would be allotted from an organised unit to carry a given amount of troops equipment, multiply the nett number of mule loads of troops equipment by 8 over 7. The file of 1 driver and 3 mules must not be broken up

A section of 12 camels, of which 11 are loaded and 1 spare, carries 55 maunds. In the same way as above, the nett number of camel loads to be carried of troops equipment multiplied by 12 over 11 gives the number of camels to be allotted for the duty from an organised corps of camels.

The following is a summary of the carrying power of the principal transport units at war strength, so far as it affects the power to lift troops equipment :—

- (a) A pack mule corps = 768 mules ... = 1,344 mds. or 48 tons.
- (b) A mule corps for a cavalry brigade—

648 mules	300 carts	= 3,000 mds.	} or 121 tons.
216 pack mules = 378 mds...	
- (c) A pony cart train = 1,064 ponies,

502 carts = 5,000 mds. or 178 tons.
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- (d) A camel corps = 972 camels ... = 4,400 mds. or 157 tons.
- (e) A train of bullocks for line of communication work— 880 bullocks,

400 carts = 4,000 mds. or 143 tons.
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In all these units there are in addition a few riding ponies for the supervisors' use.

In addition to the strength of the war establishment there is a depot troop attached to each transport unit kept at full strength in peace into which unfit men and animals are drafted on mobilisation. These depot troops would probably be concentrated in groups at suitable centres in war, to provide a nucleus for an enlarged depot for the reception of new animals bought to replace wastage, and for the training of newly engaged personnel.

A combined depot troop for all the four grantee camel corps has been formed to provide means to replace unfit animals on the mobilisation of the service troops. Depot troops are formed in mule and pony cadres on mobilisation.

It has been explained how the silladar and grantee camel corps are expanded to war strength and notice has been taken of the assistance obtained towards expansion of mule cadres from non-mobilised cavalry regiments. The remaining mules and ponies required to expand cadres have to be purchased in India, or imported from abroad. The details of these arrangements are settled by the Director-General of Contracts and Registration, and the system of registration generally is explained in an article on Registration of Transport Animals in the July number of the United Service Magazine for 1905. The Director-General issues half-yearly a series of registration sheets for each transport unit expanded or raised on mobilisation in which he shows the sources of supply of animals, carts and personnel, the period it is estimated must elapse before the unit is equipped, the minor and subsidiary points of collection of different fractions of the unit and the station from which it will be despatched. The system of collection is thus placed on a basis of order and regularity; and these arrangements mean two things of great importance:—

- (1) That the sources of supply have been previously investigated in peace; and
- (2) That the unit will arrive at the base equipped with its supervising staff instead of a mass of men and animals detraining in confusion at the rail-head and having to be organised and equipped there. A congested and ill-ordered base transport depot means confusion on the lines of communication, and in the field, and it is no part of the business of base transports officers to be made responsible for a duty that is more thoroughly and more efficiently performed in India.

The organisation of bullock half-troops of the peace complement is governed by the requirements in ambulance carriage of slow-moving field hospitals; the 48 bullocks of which these units each consist supply draught for 20 ambulance tongas, which form the wheeled

Bullock transport organisation.

carriage of a field hospital, and one army transport cart for the kits and rations of the drivers and bullocks. These absorb 42 bullocks and leave 3 pairs spare. In peace each half-troop of bullocks is equipped with 22 army transport carts for draught work in stations, the tongas being only in occasional use for special and temporary purposes. These tongas provide in each vehicle accommodation for four sick men sitting up, or two prone, or one prone and two sitting up. In fast-moving hospitals, or in cases where wheeled ambulance is useless, riding ponies or mules are used to replace tongas, and a troop of 96 animals would be allotted to one hospital, *viz.* :—80 riding animals, 8 spare, and 8 for kits and rations of the troops, etc.

The organisation of the personnel conforms to the organisation of the animals. In every section

Personnel.

one selected driver is nominated as the section leader and appointed lance-naik. The commander of a half-troop is a naik, of a troop a kot-daffadar. In units wherein there are no British warrant and non-commissioned officers in command of sub-divisions, the duty falls to native officers.

A Quartermaster-Dafadar is added to the supervisors to deal with the charge and care of stores and assist in the distribution of rations, and general Quartermaster's duties. In organised mule and pony units of permanent transport he exercises these functions under the control of the Quartermaster-Sergeant.

In the mule corps in India there has been recently instituted the post of native Adjutant, one half being of the rank of Ressaidar, and one half of that of Jemadar; they assist in the training of recruits, are available for recruiting duty and command of detachments; and they should bring to the notice of the Commandant any matter affecting the general welfare of the native staff. Their appointment gives an avenue of promotion to the native non-commissioned staff which had hitherto not existed.

The driver personnel of organised mule units are attested for

Terms of service.

10 years at a time, 6 years' in the active list, and 4 in the reserve: men who have completed 2 years' service may volunteer for transfer to the reserve, up to a limit of 16 per cent of the strength of each unit, provided vacancies exist in the reserve. Camel corps surwans are attested for 7 years, and drivers of unorganised transport for 6 years, all on the active list. Artificers of organised mule units are attested for 21 years, 12 on the active list, 9 in the reserve: the veterinary dafadars for 3 years at a time. Besides soldiers transferred from the native army to transport corps, these latter are now the only pensionable transport employees, but all other classes earn gratuities calculated at one month's pay for every year of service in the period of their attestation.

The transport driver reserve is 3,500 men strong and there

is also a small reserve of artificers. Men may be either drafted from the active

list into this reserve, or directly enlisted in it for three years at a time. Drivers are called up annually for one month's training, while artificers are mustered twice a year. While embodied for training drivers receive full pay, with compensation for dearness of food and travelling expenses. They are allotted to particular units for instruction during the training period, the majority being assembled at the headquarters of the cadre which they are intended to join on mobilisation.

In addition to the reservist drivers four men from each unit in possession of Maxim gun equipment become available for cadre expansion, as the Maxim gun mules pass into the entire charge of the gun detachment in war, and the native drivers who attend to the mules in peace are no longer required.

The native silladar cavalry also surrender the attested grass-cutters of the 89 Government grass mules in possession of each regiment and these men are allotted to cadres for expansion. Mobilised cavalry regiments retain all the 89 mules and part of the 89 drivers for their own first line transport, but the non-mobilised regiments surrender to the transport service the whole of the men and mules.

The equipment of the transport service is supplied by the Ordnance Department, the Supply and Transport Corps, and the Medical Store Department. The Ordnance Department supplies small arms and accoutrements, tents, vehicles, entrenching tools, harness and saddlery, repairing materials, and spare components proper to the above articles of equipment.

The Supply and Transport Corps supplies all line gear of mules; bullock, camel and elephant gear; office requisites for field service; miscellaneous equipment; shoes and nails; and obtains artificers' tools by indent on the Stores Department of the India Office; it also supplies all rations for animals.

The Medical Store Department supplies veterinary stores of all kinds (except bazar medicines, etc., which are bought by the Supply Officer), including Europe medicines, instruments and necessaries, and holds in reserve a stock of field veterinary equipment, in the shape of universal field veterinary chests, havresacks, and veterinary companions, required for units expanded or raised for war.

The interior economy of organised mule units is controlled by the **Interior economy of mule units.** He draws all his requirements in stores and rations from the proper departments of supply by indent, and he should have no expenditure to account for except the disbursement of pay, command feeding charges, and the clothing account. He is responsible for discipline and has the powers of an Officer Commanding in respect to Summary Courts-Martial and summary awards. He has a staff of permanent artificers for the execution of all repairs to carts and equipment; he is wholly responsible for the veterinary care of his

animals and is only entitled to the services of the Veterinary Department in the case of outbreaks of infectious and contagious epizootic diseases, and for inspection of animals for general health when his unit is mobilised for service. He controls the clothing arrangements of his men under the half-mounting system that prevails in native infantry regiments, and obtains his supplies from any suitable source.

Each man has an individual clothing account, and a sum of Rs. 15 is drawn for the equipment of every recruit, with an annual allowance for maintenance of Rs. 10 drawn quarterly in advance. Each man has to keep up a fixed quantity of kit, consisting of two khaki suits, pagri, kulla, blanket, jersey, boots, havresack, and shoulder badges.

All equipment is borne on the general equipment ledger and every unit is entitled to maintain a full complement of all Ordnance and other equipment, irrespective of any temporary deficiency in the number of mules or ponies.

From the nature of its constitution a silladar camel corps has a **Interior economy of camel units.** more elaborate system of accounts, and the pecuniary responsibility of the Commanding Officer is perhaps greater than in the case of mule units. The principal corps funds are :—

- The chanda fund.
- The hutting fund.
- The gear fund.
- The clothing fund.

The silladars subscribe monthly to these funds, and to a further additional fund for corps servants, and they thus provide the means for the replacement of their camels and gear, and the maintenance of their own huts and clothing.

The most important of these is the chanda fund, which may be defined as an insurance fund against the need for replacement of animals dying or cast. The chanda funds are regulated partly by consideration of the working life of the camel and partly by the market price of camels. Although some Commandants have a fixed subscription, it is evident that chanda funds will be in a sounder condition if the subscriptions are varied to conform to the market price of camels and other changing conditions.

In unorganised transport, clothing is issued from Government stocks according to a fixed scale for first issue and renewal, and equipment is only drawn for the animals and men present and requiring it and not for any fixed complement. These arrangements, however, are in course of change, and clothing will in future be provided under a system of money allowances, in the same manner as exists in organised units. The unorganised transport of a division is administered by the Officer Commanding Divisional Transport assisted by British Warrant and Non-Commissioned Officers, and it comprises the bullock transport and its carts, unorganised mules and camels, and

ambulance vehicles. Equipment is on charge in equipment ledgers and there is a separate artificer and veterinary staff proportionate to the numbers of animals in the Division.

Equipment over and above the requirements of corps and cadres
Custody of additional and unorganised transport is stored in equipment. charge of supply officers. In addition to the equipment actually in use each transport mule and pony unit has a small reserve, varying according to the class of articles, which is calculated to be sufficient to replace anything found unserviceable at the moment of mobilisation, and so enable the unit, when ordered on service, to move without delay. Cadres maintain in reserve the gear required for all animals brought in on expansion, which is turned over by periodical issues to replace condemned gear.

The recruiting arrangements for organised transport units conform to the general system of the native army, men being obtained either through
Recruiting. Recruiting Staff Officers, (under whose orders the recruiting parties sent out from the units carry on their work), or enlisted directly by Commandants at the headquarters of corps and cadres. In the latter case Commandants have to report the number of men so engaged to the Recruiting Staff Officer concerned, so that he may show in the annual report the total thus obtained. It was also the practice in some instances to send out independent recruiting parties to operate without communication with Recruiting Staff Officers, but this has recently been prohibited. Recruiting for silladar camel corps is entirely in the hands of Commandants.

Transport animals are cast when useless, under the orders of the General Officer Commanding; the animals
Replacement of animals. are selected for casting by the Officer Commanding the unit and the selection reviewed by the Divisional Transport Officer. The animals are replaced under arrangements for purchase made by the Director-General of Contracts and Registration, who is charged with the supply of all transport remount animals, except camels of silladar corps. Importation from abroad is arranged by Government, through the agency of the Remount Department. Grantee camel owners also make their own arrangements to replace useless animals.

The personnel of organised units are housed under arrangements made by the Commanding Officer who
Hutting and lines. supervises the erection of the buildings, after his plans and estimates have been approved by competent authority.

The hutting grant for new construction is Rs. 28 for each single man, and Rs. 50 for each married man, non-commissioned officer, veterinary dafadar and clerk. Ten per cent of the men may have their families with them in the lines. In Quetta owing to the cost of building this grant is doubled. The repairing annual grant is 12 annas per head.

The lines of a corps, as distinct from the huts, consist chiefly of the standings, sick lines, pharmacy, workshops, gear and grain

store-rooms, office, guard-room and cells. It costs about Rs. 6,000 to erect these buildings for a full mule corps.

In a silladar camel unit these line buildings are built by Government.

Although drivers are supposed to build their own huts, it is generally impossible, owing to the frequent and extended nature of their movements for the service of troops, to fully carry out this arrangement, and the buildings are usually erected by contractors with as much corps labour and carriage for materials as it is possible to supply.

CAN CAVALRY CHARGE UNBROKEN INFANTRY

(A REPLY).

BY MAJOR LESLIE CAMPBELL, BRIGADE MAJOR, ASSAM BDE

There have been two articles during the last twelve months in the Journal of the U. S. I. of India on this subject; the first by a Cavalry Officer whose opinion is that the modern rifle will not necessarily prevent Cavalry from charging unbroken Infantry, and the second article by an Infantry Officer whose opinion is practically diametrically opposed to the former. Although an Infantry Officer myself, I am inclined to accept the opinion of the Cavalryman.

Many examples from former wars have been quoted, but the conditions of smokeless powder, magazine rifles, and small-bore bullets were absent in nearly every case. The case of General French's charge at Klip Drift can scarcely be taken as a good example of the ability of Cavalry to charge unbroken Infantry, because on that occasion we had a large numerical superiority in men and guns, and also the Boers, not being armed with the bayonet, seldom dreamed of coming to close quarters. They therefore had not the moral confidence in a hand-to-hand encounter which the fixing of bayonets should have on trained Infantrymen. Their nervousness at being caught by Cavalry was notorious. Nevertheless, the smallness of our casualty roll on that occasion came as a great surprise to every one. It cannot be denied that if this charge had occurred on a field day instead of in real war, most umpires would have given a decision more against than in favour of the Cavalry.

As yet nothing has come to hand to show that bodies of Cavalry charged Infantry or even had the opportunity of doing so during the late war in Manchuria, so this interesting question is still more or less in a theoretical stage.

It seems to the present writer that too little stress is laid on the moral effect of Cavalry and also the fact is lost sight of that the "man behind the gun" is, to all intents and purposes, a similar individual to what his forbears were, and their morale (as history tells us) was again and again shaken by Cavalry. It is argued by some that, owing to the short range and inaccuracy of the Infantry weapons used in the Franco-Prussian and previous wars, Cavalry were able to cover all but the last 500 or 600 yards without being much fired at, and therefore they had an advantage that they would not now have. On the other hand, from the procedure advocated by the writer of the second article on this subject, and also from the results of an experiment, the details of which I will give at the end of this article, in which most of the hits were made on the targets at and under 650 yards, it is urged that the proper

procedure would be to reserve fire until the charging Cavalry are within 600 yards. Thus the accuracy of the modern rifle at over 600 yards as compared with previous rifles is either not made use of at all or is rendered of little account owing to the "nerves" of the firers.

The question then narrows down into ranges of 600 yards and under. The advancing Infantry nowadays would either be extended at say 5 or more paces or formed into little groups of 4 or 5 men each. Formerly, the Infantry were in close order or very nearly so, and therefore they were more under control of their officers than they are nowadays.

Owing to the modern extended line of Infantry being probably longer than that of the charging Cavalry, the resulting fire would be converging and therefore concentrated, which spells efficiency and effect. In former days, probably the Cavalry overlapped the Infantry, thus the fire of the latter was diverging. The question may then be asked:—"Would the greater fire control in close formation counterbalance the greater fire effect of an extended formation when we allow for the lesser fire control of the latter combined with the want of confidence engendered by a thin line withstanding the rush of mounted squadrons?"

The writer on this subject in the Journal for April 1905, says that the Infantry would bring up their supports and local reserves. This *might* be done if the Infantry were on the defensive, but not if they were on the offensive—the supports would not be near enough or at any rate, they would arrive out of breath.

Both writers of the former articles compare the stopping power of the modern bullet with that of the old heavy large bullet. As has been said before, there is no real experience of the effect produced by small-bore bullets on charging Cavalry, so let us turn to what actual experience of these bullets *does* teach us. There have been several occasions on which the small-bore bullet has failed to stop a rush of fanatics. Now, although, I would not be so rude as to call Cavalry "fanatics," yet the fact of men knowing that their bullets are not guaranteed to stop ghazis who mean to close with them, must tell against their morale and their confidence in their weapon. Every one knows that a well placed nickel-covered bullet has on occasions had great effect on a wild animal, but where are the rank and file who will attempt to *place* their bullets in some vital part during a Cavalry charge? They will simply fire into the "brown."

Oddly enough, the field practice, described on pages 365 and 366 of the Journal for October 1904, was carried out in September of that year when the present writer was Chief Instructor of the Musketry School at Pachmarhi. The practice was carried out by squads of about ten firers each, the commanders being chosen by lot. It should also be borne in mind that they had been thoroughly trained for quite three weeks before, and were moreover composed of Officers and Sergeants (mixed) and Native Officers and Havildars (mixed), so in all probability they were more efficient

than an ordinary squad in a Regiment. In two cases, the squad commanders lost their heads, and the results were self-evident. Owing to pecuniary reasons and the want of a sufficiently large working party to manipulate the targets from the pits in which they were worked, there was only one target (8½ ft. broad) at each distance; thus the fire was necessarily far more concentrated than if the targets had been as broad as (say) the front of a squadron.

I think it will be conceded that the conditions were more favourable than would be the case on service as regards :—

The training of the firers.

The composition of the units.

The smallness of the units and therefore the better fire control.

The narrowness of the targets.

The knowledge of what was going to happen.

FIELD PRACTICE.

Targets.—Four, each 8½ ft. by 8 ft. Vanishing. One gun target and gunners.

Distances.—About 900, 650, 500 and 200 yards. The gun was several hundred yards in rear.

Ammunition.—10 rounds in Magazine, 10 in pouches.

Method of carrying out.—The squad was lying extended at about 5 paces, firing a slow dropping fire at the gunners. Cavalry target (at an *unknown* moment) rises at about 900 yards and stays up for 30 seconds, it then falls, and three others rise in succession remaining visible for 25, 20 and 15 seconds respectively. On the furthest target appearing, the squad closes into groups fixing bayonets as they close, and then fire "slow" at 950 yards, then with fixed sights aiming high, and so on, and changing to "rapid" and lastly "magazine" fire

Results.—The average number of rounds fired per man in the 1½ minutes was only twelve, and the average number of hits per man was five. No squad made more than three hits altogether on the 900 yards target. The 303 Maxim had one run of the targets and obtained 91 hits.

Remarks.—There was only the one change of elevation after the first firing at 950 yards as it was pointed out that the fewer the orders given when men are wanted to keep cool, the better the results.

On another occasion and as an experiment, bayonets were not fixed until the 650 yards target had fallen; the result was a temporary lull at a critical time, and bad results in actual hits.

THE REMOUNTING OF NATIVE CAVALRY IN WAR.

BY CAPTAIN A. HEWLETT, 39TH (P.W.O.) CENTRAL
INDIA HORSE.

The recent Army Order laying down, that regiments of Native Cavalry, on active service, will be re-horsed by Government, has settled a question, which has long troubled all Native Cavalry Officers who have given the question serious consideration. It was quite clear, that regiments could not hope to supply the losses of horse flesh, which would ensue from operations on a large scale conducted at a distance from their headquarters. The present order meets the difficulty in a practical way.

The question, however, that now arises is whence is Government to draw the horses to supply the wastage of war?

The ordinary horse supplies available, would be quite unable to cope with the sudden demand. Should mobilization take place at any time between March and November, the Australian and Arab stables would be practically empty; and the chief country-bred fairs would have also concluded. Even if war-shipments were rushed over from Australia, they would be unbroken and unacclimatised animals.

The Remount Department maintains a Reserve for the units at present horsed by it, but it already has enough work to do of its own, and could not be expected to keep up also a supply for silladar regiments. In the present paper, an attempt is made to indicate what, it is believed, is the cheapest and most efficient manner in which such a reserve could be maintained by the regiments concerned, and which, while entailing on Government a very small annual expenditure, would ensure the existence of a permanent reserve of horses which (together with the horses available from the depôt squadrons) should be sufficient to maintain regiments at their full war-strength for at least 12 months.

Briefly put, the scheme is this:—

There are 40 regiments of Indian Cavalry (including the Guides 3 squadrons). Each regiment requires from 60 to 70 remounts yearly to keep its Horse Chunda efficient. The year in which this scheme was started, each regiment would purchase besides its usual number, an additional 50 horses, of the same class as the regiment is usually mounted on, the price of which would be advanced by Government to their Chunda funds, without interest.

These 50 horses would be allowed to run loose, for a year, either in the young stock runs, which some regiments maintain in the Punjab; or, in the small paddocks, which most regiments have near their lines, in which, at present, sick horses or remounts are turned

out. The Remount Department have found, by experience, that quite a small paddock is sufficient to maintain a large number of horses in health and condition, provided it is kept clean, and that the horses get a small grain and grass ration.

During one year, these 50 animals would be the property of Government, liable to be called up at any moment, should necessity arise, and would thus form a true reserve of 2,000 horses. At the end of the year, they become the property of the regiment, and are replaced by a fresh fifty horses, bought, (with the extra ten or fifteen horses required to bring the year's remounts for the regiment up to its full total) under the usual regimental arrangements.

This is the outline of the scheme proposed, and it is believed that it would be profitable both to Government and to the Native Cavalry generally—to Government, because they would maintain an efficient reserve of 2,000 horses, with the very smallest possible outlay—and to the Native Cavalry, because they would get animals as remounts which, if walers, had had a year in the country in which to become acclimatised, and which had been handled and quieted down, instead of the usual scary brutes they get raw from the shippers, or if regiments mounted on Arabs or country-breds, because they would get animals which had been castrated, and were fit to put into riding school at once, and to do regular work, with their muscles hardened by the liberty of the paddocks, instead of flaccid from being moored stem and stern in a dealer's stables. Again, Commanding Officers might for the last month or two of the animals year of probation, have them backed and quietly ridden in separate schools, thus enabling them, when they do become regimental property, to join the ranks with the least delay possible.

To come to the financial aspect of the scheme the details work out as follows:—

Initial Expenditure.—Advances to Regimental Chundas for the cost of 50 horses at Rs. 400 a piece. (This sum would include horse-price, dealer's commission, and rail fare to destination).

$$400 \times 50 \times 40 = \text{Rs. } 8,00,000.$$

Paid outright to each regiment as part cost of erecting paddocks, chappar sheds for shelter in the rains, etc., at 500 rupees a regiment.

$$500 \times 40 = \text{Rs. } 20,000.$$

Paid to each regiment the cost of one chaff-cutter for use of reserve horses at Rs. 100 a regiment.

$$100 \times 40 = \text{Rs. } 4,000.$$

Total Initial expenditure, Rs. 8,24,000.

Annual Recurring Expenditure.—Feed of 50 horses at Rs. 6 per horse per mensem. (As the horses are doing no work, it has been calculated that 3 lbs. of grain or its equivalent in other grain, well mixed with freshly-cut chaff, and about 20 lbs. of hay or grass would be ample to keep a horse in fair condition). This amount, striking an average throughout the whole of India, works out at about Rs. 6 per horse.

$$50 \times 6 \times 40 \times 12 = \text{Rs. } 1,44,000.$$

Pay of Establishment.—For this it has been calculated that one syce to ten horses, one bhisti and one sweeper, costing Rs. 50 per mensem would be sufficient.

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With reference to this monthly expenditure it would be found much simpler and cheaper in the long run, besides saving much unnecessary clerical labour, if the monthly sum required for the up-keep of the reserve, *viz.*, Rs. 350, were handed over in a lump sum to the Regimental authorities instead of being doled out on contingent bills, and if Regimental Commanding Officers were to be trusted to disburse the amount to the best advantage of the reserve horses under their charge.

The total ordinary annual expenditure then works out at a sum of Rs. 1,68,000, or only Rs. 85 per horse maintained. An addition must be made to this, however, to allow for casualties among the horses.

This may be taken at 3 per cent which would involve the expenditure of another Rs. 24,000, thus bringing the annual expenditure up to Rs. 1,92,000 or under £12,800 a year, truly not a very large sum! This scheme, it is believed, possesses the following merits:—

(1) It is the cheapest form possible of maintaining the requisite reserve, because, by utilising the facilities already possessed by the Native Cavalry, outlay on stabling and supervising staff is reduced to a minimum.

(2) It is in accordance with the traditions and spirit of the Native Cavalry, enabling them to still select their own horses in the open market and maintain them in peace time.

(3) It is readily expansible in times of emergency. A paddock that will hold 50 horses will hold 100 for a few months should necessity arise, it merely being a matter of engaging a few additional syces.

The machinery for purchasing and maintaining the animals is always in existence, and being fully de-centralised would work as smoothly in times of emergency as during the ordinary routine of peace. In time of war the horses would be assembled at *depôts* near the base and trained by a selected staff before final issue to regiments at the front. If hostilities appeared to be imminent, but before they had actually broken out, and before mobilization was ordered, all the reserve horses in charge of regiments, could be broken and schooled by the men of the regiment; all that would be necessary would be to double their grain ration. They would thus arrive at the base *depôts*, partially trained; and would require very little further breaking, to enable them to take their places in the ranks. Their places in the regimental paddocks, would be filled by a fresh 50 horses, who would be under the charge of the officer left behind at the regimental *depôt*. These, again, would be partially trained by the men of the reserve squadron in the same manner as remounts, the property of the regiment, were supposed to be trained prior to the issue of the recent Army Order.

When the horse supply at the base depôts was running low, a requisition on the regimental depôts for half their horses or whatever percentage was considered necessary, would again replenish it and thus a constant supply of horses could be maintained.

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The fact that 3 regiments (the late Madras Light Cavalry) are non-silladar, in no way affects the scheme. Their reserve horses would be supplied to them by the Remount Department, instead of being bought by the regiments, otherwise they would be treated exactly the same.

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The Application of Military History to Modern Warfare. By Captain J. W. E. Donaldson. (Messrs. Thacker, Spink & Co.)

This is a small volume which contains a great deal of matter showing careful research and study.

In the preface the author acknowledges the debt he owes to Staff College teaching. The study of campaigns and battles is perhaps the most interesting part of the Staff College curriculum as those officers can testify who have sat at the feet of Colonel Lonsdale Hale, Colonel Haking and the late Colonel Henderson.

The introductory chapter is a plea for the more earnest and intelligent study of past wars. The author asks students to learn not merely what events happened in a campaign, but why they happened. He then goes into the campaigns of Austerlitz, Jena, Vimiero and Corunna, Salamanca, Waterloo and Stonewall Jackson's Valley Campaign.

It was of course impossible for the author to include every point in so small a compass. It is equally impossible in a review to go into each campaign selected by the author. We will therefore take one campaign and criticize it, and we select Waterloo as being perhaps the best known in detail to British Officers. The author begins the campaign with the situation on the evening of the 14th June 1815. He thereby omits to mention a point which probably affected the whole campaign and to which due weight has seldom been given. On the 12th June Napoleon arrived at Laon to find that Grouchy who commanded the cavalry had got no orders to move. The result was the cavalry had to make forced marches in order to get into their places. Some regiments went 60 miles without off-saddling. The further result was that many horses were "sore-backed and tucked up." The effect of this contretemps on the campaign must have been very great. It probably accounts for the want of dash of the cavalry at Charleroi, Gilly and after Ligny. The above was a much better example of bad staff work than the case of Vandamme mentioned by the author. In the latter case the Emperor was able to rectify matters to a certain extent by sending forward the Young Guard under Duhesme by a country track. But the delay to Vandamme involved the bridging train, a most important matter when there were so few bridges over the Sambre. The fact is, the more one reads about this campaign the more wonderful does it appear that Napoleon accomplished as much as he did. So great was his genius that people are apt to forget he was but human. What with bad luck, bad staff work, disobedience of orders, desertion among the rank and file, and suspicion and distrust, there was hardly anything that he had not to contend against. We do not therefore agree with the author that "it was

possible for Napoleon by 6 A.M. on the 16th to have occupied Fleurus with the bulk of his army and yet to have concentrated 40,000 men on the road to Brussels."

Three quarters of Gerard's Corps were on the wrong side of the Sambre at Châtelet on the night of the 15th, and at this place there was only one bridge. Gerard's Corps had been delayed 4 hours at Floresnes owing to the desertion of Colonel Bourmont (Houssaye's Waterloo, p. 111) and later on there was further bad staff work or disobedience (*ibid*, p. 158). We therefore think that the cause of delay was beyond Napoleon's control and that he did as well as he could have done.

The author makes no mention of the moral effect of Wellington's name. Against Wellington Napoleon sent Ney who had under him Reille and Drouet d'Erlon. Here we think lay Napoleon's mistake. He must have known from Soult and others the respect in which the French Peninsular officers held Wellington. Now Ney was just the man to send against Wellington if he had never met him before. But Wellington had chased Ney and Massena out of Portugal in 1810. Ney was like a bull who will go head-down against a brick-wall, but even a bull will think twice about repeating the experiment. Reille and Drouet d'Erlon had felt the weight of Wellington's arm many a time. Had they not been driven out of Spain in 1813? Were not these experiences quite sufficient to make all three of these commanders cautious; caution was the last thing Napoleon wanted at Quatre Bras.

Two other points and we are done. Firstly the weather, and secondly, the crops. The latter were 4 to 5 feet high. The former was, just before Waterloo, foul. Put yourself in the place of the French soldier marching up to his knees in mud and soaked to the skin arriving in the pitch darkness, blundering to his place through the soaking crops, without firewood and in many cases without food. Is it any wonder Napoleon delayed his attack next morning. He knew, no one better, that soldiers are not machines. The wonder is they fought so well. We have gone into the above detail to show that there are some points to be considered besides those mentioned by the author. One must take into consideration the human element in all strategical questions from the man at the top down to the rank and file. We do not quarrel with what the author has stated. The whole book is excellent and will probably be much consulted and if the lessons brought out in it are properly digested, the book will do excellent work.

Whether examiners will thank the author for drawing 34 strategical and tactical lessons from Jackson's Valley Campaign is another thing. We have seen questions set at examination somewhat as follows:--What lessons do you draw from the Valley Campaign?

The way in which the situations and movements of the opponents at various times are shown in smaller print than the rest of the text, makes it much easier to follow the course of each campaign. The maps are clear but do not appear to be in every case quite accurate.

For instance in the Salamanca map, even allowing for the bend in the Zamora road, that place is shown much nearer to Salamanca than Tordesillas, and yet Wellington states that Tordesillas is as near Salamanca almost as Tora and nearer than Zamora. (Villa Verde 3-7-1812, to General Graham.)

It is indeed to be regretted that the author will never again put pen to paper.

The Salamanca Campaign. By Captain A. H. Marindin. (Hugh Rees, Ltd.)

This book is very well got up in the new style and it is a pleasure to peruse it for this reason alone if for no other. Large print—broad margins—one side of every page blank, and lastly a lavish supply of very good maps—all this helps to make a volume readable. At the same time a thin volume of this size is liable to damage and the volume under review has been badly bent at one corner in the post. There are no less than four maps of Spain in the first 9 pages of the book. It is a pity the author has only put in the names mentioned in the text. It is obvious that any one studying the campaign with this volume would be sure to refer frequently to Wellington's despatches and other books without maps, and we would suggest that in future editions a map be inserted of the western half of Spain giving all the names possible. Foy's map of Spain would be a good one on which to base it. We would also suggest that the "numbers according to various authorities" on pp. 6, 7, 8, would be better in an appendix. What we do want to know is the data on which Wellington and Mormont formed their plans. Their estimate of the opposing sides may have been wrong, but it was all they had to go on.

We do not altogether agree with the strategy previous to the campaign as stated by the author. A minor point to begin with is that Massena left Spain in May 1811 or previously, whereas the author makes it appear on page 3 that he left after the advance into Spain was begun. Again on page 2 it is stated that at the end of 1811 "Soult moved south. Wellington thereupon resumed the offensive." In the first place, Soult moved south in June 1811 in order to capture Cadiz and not for the purpose of subsisting his troops as stated by the author. Great importance was attached by both sides to the possession of this place. Soult's main object throughout this period of the war was the capture of this great commercial port and Wellington had great pressure put on him from home to relieve the siege. In the second place Wellington's offensive movement had nothing to do with Soult's moving south. After he had relieved Badajos in June 1811, Soult returned to the south of Spain. Wellington remained on the defensive until the following January. Wellington had made up his mind as early as May 1811 to capture Ciudad Rodrigo, but to do so he had to bring up his siege train, and while he was doing this his army went sick and he had to remain doing nothing till it got well. The army being fit for operations and

the siege train ready, Wellington received news that the French armies *in the north* of Spain and Estramadura had scattered for various operations. He, (as he writes on 29th January 1812 to the Duke of Richmond), immediately pounced on Ciudad Rodrigo with the object of compelling these armies to collect again and in the hopes that before they collected he might capture Ciudad Rodrigo. His object in making the French armies collect was to relieve the pressure on other parts of Spain such as Galicia, the Asturias and Valencia. Again the author (page 2) would make it appear that before the capture of Badajos Wellington had a deep-laid plan for striking at the French communications and that he first of all captured Ciudad Rodrigo and then Badajos, so as to secure Portugal and the lines of communication. We hold that Wellington wanted first of all to capture Badajos then to secure Portugal and his communications by capturing Ciudad Rodrigo after which he intended to advance against Soult and relieve Cadiz. In his despatch of 23rd May 1811 to the Earl of Liverpool he writes:—"Supposing I can get through the siege of Badajos, it will be impossible to do more to the southward, till I shall have closed the door upon Beira by obtaining possession of Ciudad Rodrigo." Again on 24th March 1812, he writes to Lord Bentinck:—"If I should succeed (*in taking Badajos*), much will depend upon the plan adopted by the enemy. Marmont appears inclined to carry on operations to the northward and I may be obliged to remove the army again to that quarter. My wish is to oblige Soult to evacuate Andalusia, which I should effect, if I could be sure of the Spaniards holding their ground in Galicia."

Later on having captured Ciudad Rodrigo and Badajos Wellington writes again to the Earl of Liverpool on 22nd April 1812:—"I should have been in Andalusia at this moment at the head of 40,000 men and should have obliged Soult to withdraw from thence if, etc." And on 24th April 1812 he writes to General Graham:—"I am in great hopes to be able to carry into execution our southern scheme yet." It was not till the following month (May) that Wellington reluctantly gave up his plan and adopted a fresh one. The reasons for this were—

(1) because he had found out that Marmont had got 'heavy cannon' with which to attack and take Ciudad Rodrigo during his proposed absence in Andalusia,

(Napier, Vol. IV., pp. 222-23.

(2) the state of the crops which would allow Marmont, if he preferred, to move south to Soult's help.

But even after he had made a new plan of campaign there is nothing to show that Wellington had any hopes of cutting the French communications with France, or that he considered the line of communications from Bayonne to Madrid as vital to the French. That it was very important must have been obvious to him, but he was well aware that the French had a second line of communications along the eastern coast of Spain. We, therefore, find him after the battle of Salamanca and after his arrival in Madrid writing to the

Earl of Bathurst (24th July 1812) as follows:—"I think the French could not now remain in Andalusia, probably not South of the Duero, if the Anglo-Sicilian army had appeared upon the eastern coast." This shows:—

- (1) that Wellington did not consider it necessary for Soult to abandon Andalusia even though the British forces were in Madrid,
- (2) that Wellington considered the line of communications from Bayonne to Madrid as vital to the French only if their subsidiary line by the east of Spain was successfully attacked.

We have laboured this point somewhat because we do not believe in making a campaign fit a theory. Wellington's object was to beat Marmont, but he never expected to win such a decisive victory as that of Salamanca. He hoped, however, to win some sort of a victory and as a result he hoped that Soult and others would be compelled to weaken their forces by detachments sent to Marmont's assistance. Thereby he would relieve the pressure on Cadiz and other places in Spain, and so encourage its inhabitants to make greater efforts to rid themselves of the French yoke. We quote the following from Napier, Vol. IV: "It was only necessary to isolate Marmont long enough to force a battle. If that result was not obtained, there would still be a gain because the march of the other Generals to his aid would relieve many places and give the Spaniards opportunities to act *which was always the basis of Wellington's plans*."—(Vol. IV, book XVII, Chap. I, pp. 158-9).

The actual campaign is very well described by the author and the 11 maps showing the manœuvres of the two armies are all that can be desired. The last chapter is devoted to criticisms on, or lessons to be learnt from, the campaign. These number some 24 with sub-heads. Officers who wish to learn the Salamanca campaign thoroughly cannot do better than master this volume. If they at the same time read up the references especially in Wellington despatches they should have no difficulty in facing any examination on the subject.

The Battle of Mukden, with an Essay by Lt.-General von Caemmerer. [Translated from the Militar Wochenblatt.]
By Lt. Karl von Donat. Hugh Rees, Ltd.

The Battle of Mukden appeared as a supplement to the Militar Wochenblatt and English readers will be grateful to Lt. Karl von Donat for his translation. This translation to which has been added an essay by Lt.-Gen. von Caemmerer commenting on the battle only costs 6 shillings net. The maps alone must be worth this sum.

The first portion of the book gives without comment the movements of the two armies. It would appear that General Kuropatkin had intended to take the offensive on the 25th February. Unfortunately for him Marshal Oyama forestalled him by a few days. The

out. The Remount Department have found, by experience, that quite a small paddock is sufficient to maintain a large number of horses in health and condition, provided it is kept clean, and that the horses get a small grain and grass ration.

During one year, these 50 animals would be the property of Government, liable to be called up at any moment, should necessity arise, and would thus form a true reserve of 2,000 horses. At the end of the year, they become the property of the regiment and are replaced by a fresh fifty horses, bought, (with the extra ten or fifteen horses required to bring the year's remounts for the regiment up to its full total) under the usual regimental arrangements.

This is the outline of the scheme proposed, and it is believed that it would be profitable both to Government and to the Native Cavalry generally—to Government, because they would maintain an efficient reserve of 2,000 horses, with the very smallest possible outlay—and to the Native Cavalry, because they would get animals as remounts which, if waters, had had a year in the country in which to become acclimatised, and which had been handled and quieted down, instead of the usual scary brutes they get now from the shippers, or if regiments mounted on Arabs or country-breds, because they would get animals which had been castrated, and were fit to put into riding school at once, and to do regular work, with their muscles hardened by the liberty of the paddocks instead of flayed from being moored stem and stern in a dealer's stables. Agent Commanding Officers might for the last month or two of the animal's year of probation have them backed and quietly ridden in separate schools, thus enabling them when they do become regimental property to join the ranks with the least delay possible.

To come to the financial aspect of the scheme the details work out as follows:—

Initial Expenditure.—Advances to Regimental Churches for the cost of 50 horses at Rs. 400 a piece. (This sum would include horse-price, dealer's commission, and rail fare to destination.)

$$400 \times 50 \times 40 = \text{Rs. } 8,00,000.$$

Paid outright to each regiment as part cost of existing paddocks, chappar sheds for shelter in the rains, etc., at 500 rupees a regiment.

$$500 \times 40 = \text{Rs. } 20,000.$$

Paid to each regiment the cost of one chaff-cutter for use of reserve horses at Rs. 100 a regiment.

$$100 \times 40 = \text{Rs. } 4,000.$$

Total Initial expenditure: Rs. 8,24,000.

Annual Recurring Expenditure.—Feed of 50 horses at Rs. 6 per horse per month. (As the horses are doing no work, it has been calculated that 3 lbs. of grain or its equivalent in other grain well mixed with freshly-cut chaff and about 20 lbs. of hay or grass would be ample to keep a horse in fair condition.) This amount striking an average throughout the whole of India works out at about Rs. 6 per horse.

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the siege train ready, Wellington received news that the French armies *in the north* of Spain and Estramadura had scattered for various operations. He, (as he writes on 29th January 1812 to the Duke of Richmond), immediately pounced on Ciudad Rodrigo with the object of compelling these armies to collect again and in the hopes that before they collected he might capture Ciudad Rodrigo. His object in making the French armies collect was to relieve the pressure on other parts of Spain such as Galicia, the Asturias and Valencia. Again the author (page 2) would make it appear that before the capture of Badajos Wellington had a deep-laid plan for striking at the French communications and that he first of all captured Ciudad Rodrigo and then Badajos, so as to secure Portugal and the lines of communication. We hold that Wellington wanted first of all to capture Badajos then to secure Portugal and his communications by capturing Ciudad Rodrigo after which he intended to advance against Soult and relieve Cadiz. In his despatch of 23rd May 1811 to the Earl of Liverpool he writes:—"Supposing I can get through the siege of Badajos, it will be impossible to do more to the southward, till I shall have closed the door upon Beira by obtaining possession of Ciudad Rodrigo." Again on 24th March 1812, he writes to Lord Bentinck:—"If I should succeed (*in taking Badajos*), much will depend upon the plan adopted by the enemy. Marmont appears inclined to carry on operations to the northward and I may be obliged to remove the army again to that quarter. My wish is to oblige Soult to evacuate Andalusia, which I should effect, if I could be sure of the Spaniards holding their ground in Galicia."

Later on having captured Ciudad Rodrigo and Badajos Wellington writes again to the Earl of Liverpool on 22nd April 1812:—"I should have been in Andalusia at this moment at the head of 40,000 men and should have obliged Soult to withdraw from thence if, etc." And on 24th April 1812 he writes to General Graham:—"I am in great hopes to be able to carry into execution our southern scheme yet." It was not till the following month (May) that Wellington reluctantly gave up his plan and adopted a fresh one. The reasons for this were—

(1) because he had found out that Marmont had got 'heavy cannon' with which to attack and take Ciudad Rodrigo during his proposed absence in Andalusia,

(Napier, Vol. IV., pp. 222-23.

(2) the state of the crops which would allow Marmont, if he preferred, to move south to Soult's help.

But even after he had made a new plan of campaign there is nothing to show that Wellington had any hopes of cutting the French communications with France, or that he considered the line of communications from Bayonne to Madrid as vital to the French. That it was very important must have been obvious to him, but he was well aware that the French had a second line of communications along the eastern coast of Spain. We, therefore, find him after the battle of Salamanca and after his arrival in Madrid writing to the

Earl of Bathurst (24th July 1812) as follows:—"I think the French could not now remain in Andalusia, probably not South of the Duero, if the Anglo-Sicilian army had appeared upon the eastern coast." This shows:—

- (1) that Wellington did not consider it necessary for Soult to abandon Andalusia even though the British forces were in Madrid,
- (2) that Wellington considered the line of communications from Bayonne to Madrid as vital to the French only if their subsidiary line by the east of Spain was successfully attacked.

We have laboured this point somewhat because we do not believe in making a campaign fit a theory. Wellington's object was to beat Marmont, but he never expected to win such a decisive victory as that of Salamanca. He hoped, however, to win some sort of a victory and as a result he hoped that Soult and others would be compelled to weaken their forces by detachments sent to Marmont's assistance. Thereby he would relieve the pressure on Cadiz and other places in Spain, and so encourage its inhabitants to make greater efforts to rid themselves of the French yoke. We quote the following from Napier, Vol. IV: "It was only necessary to isolate Marmont long enough to force a battle. If that result was not obtained, there would still be a gain because the march of the other Generals to his aid would relieve many places and give the Spaniards opportunities to act *which was always the basis of Wellington's plans*."—(Vol. IV, book XVII, Chap. I, pp. 158-9).

The actual campaign is very well described by the author and the 11 maps showing the manœuvres of the two armies are all that can be desired. The last chapter is devoted to criticisms on, or lessons to be learnt from, the campaign. These number some 24 with sub-heads. Officers who wish to learn the Salamanca campaign thoroughly cannot do better than master this volume. If they at the same time read up the references especially in Wellington despatches they should have no difficulty in facing any examination on the subject.

**The Battle of Mukden, with an Essay by Lt.-General von
Caemmerer. [Translated from the *Militär Wochenblatt*.]
By Lt. Karl von Donat. Hugh Rees, Ltd.**

The Battle of Mukden appeared as a supplement to the *Militär Wochenblatt* and English readers will be grateful to Lt. Karl von Donat for his translation. This translation to which has been added an essay by Lt.-Gen. von Caemmerer commenting on the battle only costs 6 shillings net. The maps alone must be worth this sum.

The first portion of the book gives without comment the movements of the two armies. It would appear that General Kuropatkin had intended to take the offensive on the 25th February. Unfortunately for him Marshal Oyama forestalled him by a few days. The

possible for Napoleon by 6 A.M. on the 16th to have occupied Flersheim with the bulk of his army and yet to have concentrated 40,000 men on the road to Brussels."

Three quarters of Gerard's Corps were on the wrong side of the Sambre at Châtelet on the night of the 15th, and at this place there was only one bridge. Gerard's Corps had been delayed 4 hours at Flersheim owing to the desertion of Colonel Bourmont (*Houssaye's Waterloo*, p. 111) and later on there was further bad staff work or disorganization (*ibid.* p. 158). We therefore think that the cause of delay was beyond Napoleon's control and that he did as well as he could have done.

The author makes no mention of the moral effect of Wellington's name. Against Wellington Napoleon sent Ney who had under him Reille and Drouot d'Erlon. Here we think lay Napoleon's mistake. He must have known from Soult and others the respect in which the French Peninsular officers held Wellington. Now Ney was just the man to send against Wellington, if he had never met him before. But Wellington had chased Ney and Massena out of Portugal in 1810. Ney was like a bull who will go head down against a brick wall but even a bull will think twice about repeating the experiment. Reille and Drouot d'Erlon had felt the weight of Wellington's arm many a time. Had they not been driven out of Spain in 1810? Were not these experiences quite sufficient to make all three of these commanders cautious, caution was the last thing Napoleon wanted at Quatre Bras.

Two other points and we are done. Firstly the weather and secondly the crops. The latter were 4 to 5 feet high. The former was just before Waterloo, foul. Put yourself in the place of the French soldier marching up to his knees in mud and soaked to the skin arriving in the pitch darkness blundering to his place through the soaking crops without firewood and in many cases without food. Is it any wonder Napoleon delayed his attack next morning? He knew no one better that soldiers are not machines. The weather as they fought so well. We have gone into the above detail to show that there are some points to be considered besides those mentioned by the author. One must take into consideration the human factor in all strategical questions from the man at the top down to the rank and file. We do not quarrel with what the author has stated. The whole book is excellent and will probably be much consulted and the lessons brought out in it are properly digested, the book is an excellent work.

Whether examiners will thank the author for drawing 4 strategical and tactical lessons from Jackson's Valley Campaign is another thing. We have seen questions set at examination so far as what as follows:—What lessons do you draw from the Valley Campaign?

The way in which the situations and movements of the various armies at various times are shown in sketch or print than in the rest of the book makes it much easier to follow the course of each campaign. The maps are clear but don't appear to be in every case quite accurate.

For instance in the Salamanca map, even allowing for the bend in the Zamora road, that place is shown much nearer to Salamanca than Tordesillas, and yet Wellington states that Tordesillas is as near Salamanca almost as Tora and nearer than Zamora. (Villa Verde 3-7-1812, to General Graham.)

It is indeed to be regretted that the author will never again put pen to paper.

The Salamanca Campaign. By Captain A. H. Marindin. (Hugh Rees, Ltd.)

This book is very well got up in the new style and it is a pleasure to peruse it for this reason alone if for no other. Large print—broad margins—one side of every page blank, and lastly a lavish supply of very good maps—all this helps to make a volume readable. At the same time a thin volume of this size is liable to damage and the volume under review has been badly bent at one corner in the post. There are no less than four maps of Spain in the first 9 pages of the book. It is a pity the author has only put in the names mentioned in the text. It is obvious that any one studying the campaign with this volume would be sure to refer frequently to Wellington's despatches and other books without maps, and we would suggest that in future editions a map be inserted of the western half of Spain giving all the names possible. Foy's map of Spain would be a good one on which to base it. We would also suggest that the "numbers according to various authorities" on pp. 6, 7, 8, would be better in an appendix. What we do want to know is the data on which Wellington and Marmont formed their plans. Their estimate of the opposing sides may have been wrong, but it was all they had to go on.

We do not altogether agree with the strategy previous to the campaign as stated by the author. A minor point to begin with is that Massena left Spain in May 1811 or previously, whereas the author makes it appear on page 3 that he left after the advance into Spain was begun. Again on page 2 it is stated that at the end of 1811 "Soult moved south. Wellington thereupon resumed the offensive." In the first place, Soult moved south in June 1811 in order to capture Cadiz and not for the purpose of subsisting his troops as stated by the author. Great importance was attached by both sides to the possession of this place. Soult's main object throughout this period of the war was the capture of this great commercial port and Wellington had great pressure put on him from home to relieve the siege. In the second place Wellington's offensive movement had nothing to do with Soult's moving south. After he had relieved Badajoz in June 1811, Soult returned to the south of Spain. Wellington remained on the defensive until the following January. Wellington had made up his mind as early as May 1811 to capture Ciudad Rodrigo, but to do so he had to bring up his siege train, and while he was doing this his army went sick and he had to remain doing nothing till it got well. The army being fit for operations and

5th Japanese army under General Kawamura began to make its presence felt about the 21st February; at the same time Kuroki's army deployed to its right. These movements were observed by the Russians and in addition their Headquarters received the wrong information that all the Japanese reserves at Yantai had started towards the east. Kuropatkin therefore concluded that his left was to be attacked, and on the 24th February he cancelled his proposed offensive movement. At the same time he began moving troops from his right and centre to his left flank. By the 28th February, however, he had become fully alive to the extent of the danger from the south-west, *i.e.*, to his right flank. Having got into a real good tangle owing to the original false move to the left, Kuropatkin spent the next ten days trying to escape the Japanese toils and appears to have done so more successfully than was popularly supposed at the time. One cannot help sympathizing to a certain extent with General Kuropatkin. No General can act correctly without fairly accurate information, and this battle shows the importance of having a really good Intelligence Branch in war. At the same time even with the intelligence available it would have been better to have moved the 1st Siberian Corps to a central position only and to have awaited further developments. On the other hand, it must be remembered that all the way from the Yalu the Japanese had worked against the Russian left flank and this was the strategical flank on this particular occasion.

The comments on the battle by Lieutenant-General von Caemmerer are very interesting. This distinguished officer evidently holds a brief for the German Service Regulations. He admits that there are dissentient voices regarding the doctrines contained in them, and then goes on to prove them correct from the battles. This, however, he finds somewhat difficult to do, because although the Japanese 5th Army acted rightly in accordance with the aforesaid regulations, the position before the battle and the movements of General Nogi's Corps violated certain parts and paras thereof. However, as Marshal Oyama was *au fait* of the regulations he must have had reasons for his action and the writer goes into the pros and cons. His conclusion is as follows:—"Only one *obvious* reason can be urged in favour of the adopted plan, namely, that the actual concentration of the 3rd Army was more easily hidden from the enemy's view than any advance over the Liau Ho lowlands would have been. If the Russian position was exactly known, if it was known for certain that the Russians had no reserves of sufficient strength echeloned towards the exposed flank, if it could therefore be hoped to carry out the difficult wheel round the western flank of both armies unmolested, then no objection can be raised against the Japanese measures."

We wonder how the above will stand the test of time. The true history of the battle will not be written for years, but we are not at all sure that the above will turn out to be the correct solution regarding Nogi. We would suggest the following as being a possible solution. It is well known that the Japanese had very good informa-

tion throughout the war. We think therefore that it is probable that Marshal Oyama had an inkling of the proposed Russian offensive movement. Impressed by what had occurred at Sandepu or Heikoutai he probably placed Nogi where he did, as a purely defensive measure. Had the Russian offensive movement come off Nogi would have acted with decisive effect on its right flank and rolled it up. Nogi was in fact kept back as a rod in pickle. Oyama must have known that a force about equal to Nogi's *was* echeloned in rear of the Russian right flank and our idea is that he had no intention of moving Nogi while this force remained where it was. This force was moved by Kuropatkin on the night of 24th—25th and Nogi commenced his flank march on the 27th two days after, *i.e.*, after Oyama had had time to get information of the Russian move. It must be remembered all through that the Russians were acting in a hostile country whereas the Japanese were not—a most important point as regards obtaining information.

There is a good deal more of interesting matter in the comments. We strongly advise all officers to read this book, especially studying the maps.

Demolitions in Savage Warfare. By Bt. Major S. H. Sheppard, D.S.O., R.E. (Pioneer Press, Allahabad.)

There is no subject so easy to master as the method of carrying out the ordinary demolitions required on Field service, and yet there is perhaps no subject in which the ordinary officer has displayed so much ignorance on service. On several occasions officers have lost their lives owing to their ignorance of explosives, and we need only mention in support of this statement the awful accident at Tungchau in the last China Campaign. The volume under review should therefore be welcomed by all officers in the army and will be well worth taking on service, both on account of the matter it contains and its minute size. The most interesting matter in the book is the description of actual work carried out on service by the author, who is well known to be an expert at demolitions as is he at racquets.

Fortification Applied to Schemes. By Major Shadwell and Major Ewbank. (Thacker, Spink and Co., Calcutta, Rs. 7.)

This book should prove a boon to officers studying for promotion examinations or for the Staff College. It is based on the Manual of Military Engineering of 1903, but references will be easy to trace in M. M. E. 1905.

Chapter I gives practical notes, memoria technica, and sets of questions and answers on each section of the Manual, those on sections 2, 4, 5 and 6 will be found particularly useful. Chapters II and VIII give detailed examples of calculations for work and time, and a simple bridge repair scheme is worked out in Chapter XII. Demolitions are considered at some length in Chapters IX, X, XI o-1.

and XIII, and encampments, bridging, and the general principles of fortification are dealt with in Chapters III to VII. Chapter XIV contains old examination papers, with answers—it is to be regretted that none more recent than those of 1902 have been included. The book winds up with schemes, involving the use of maps, with and without solutions.

Both those studying Elementary Field Fortification, and those with a considerable knowledge of the subject, who may require a “refreshing course,” will find useful information, attractively imparted in this work.

**The Solution of Tactical Problems. By Lt.-Col. J. Layland
Needham, p.s.c. (Hugh Rees, Ltd.)**

The object of this book is to teach officers how to set about the work of solving “tactical problems which now form so large a part of the papers on tactics set at the Staff College, promotion and other examinations.” The author has accordingly taken each type of problem—attack, outpost, march, convoys, &c., and has arranged in logical sequence the various steps to be usually taken in working them out. Comments and explanations are added regarding each step. The work is entirely based on *Combined Training 1905*, of which it contains a valuable summary, and it will be very useful to officers studying for examinations.

PRECIS OF FOREIGN MILITARY PAPERS.

FRENCH PAPERS.

BY CAPTAIN W. L. J. CAREY, R.A., D.A.D.G.O.

Revue de Cavalerie. March 1906.

The most striking article appears to be a careful study of the two-year system, as it affects the training of cavalry for war. The subject is discussed at great length and in some detail, a completely new method of instruction being described. The first portion of the excellent summary which forms the concluding chapter gives a good idea of the principles advocated:—

“We have come to the end of this study. The numerous subjects covered by its title are far from being exhausted. Our object was simply to anticipate the principal difficulties, which will be met with in the application of the two years’ service system to cavalry, and to indicate the methods of instruction which appear to us the most suitable, if not to wholly triumph over these difficulties, at least to minimise their unfortunate consequences.

It would be childish to endeavour to deceive ourselves. From the war standpoint, cavalry men who pass two years with the colours will never be equal to those who serve for three years or more. These two years will, with considerable difficulty, suffice to give them a complete training, but not to impress this training on them enough to prevent their forgetting it.

Furthermore, to enable the regiments, which the two years’ service will give us, to have the necessary strength and stability, it would be absolutely indispensable that the effective strength of squadrons on the peace footing (approaching as nearly as may be to the war establishment) should in addition be entirely made up of men who can be called up for war, who perform their full share of duties and undergo the whole of the training.

“Employed men” are the plague-spot of our regiments. But they are necessary, for the accessory services must of course be carried on, and it is impossible to dispense with cooks, lamp-men, and riding school orderlies any more than with clerks, watchmen, orderlies and artisans. At the present moment having three classes with the colours, the effective strength is so reduced in regiments that there are not more than 15 men per squadron who perform all their duties. What will it be with only two classes? All that constitutes the legion of “employed men,” who cannot be mobilised with active units, should therefore be provided from the men who were formerly classed in the auxiliary services, and should be supernumerary to the establishment. Otherwise instruction, duties, and the training of young horses will encounter insurmountable difficulties. Will it be so?

Infantry may, without very serious inconvenience, receive a large proportion of reservists on mobilisation. And the weakness of the peace establishment, although extremely unfavourable to training, does not involve the same consequence for an arm composed of men alone, that it does for cavalry, which has to train, look after and keep always fit a number of horses very nearly equal to that required in the field.

Moreover, the duties of cavalry in war are so important and so difficult that units of this arm, called upon to form part of armies in the first line, to be really fit for their task, should be composed only of active elements, well versed in their work, and always maintained in a state of preparedness, and one cannot but shudder at the thought that with the two years' system it may one day be necessary to mobilise at a period when more than half the strength of a squadron will have to be made up of reservists. However, officers of this arm have but one duty. They should throw themselves body and soul into the struggle to maintain at all costs at its former value the instrument which will be put into their hands in the day of war. The curtailment of the period of service with the colours, as we have seen, necessitates a complete revolution in the method of instructing troops and preparing them for war.

Summing up the propositions already advanced we may say that this method rests to-day on the following five principles:—

1. Raising the moral value of the man to the highest degree by education.

2. Instructing him by an appeal to his noblest faculties, his intelligence and reasoning powers.

3. Obtaining the value of the mass through that of the man, developing his personality by strictly individual instruction.

4. Simplifying training by eliminating all that does not contribute directly to the preparation of the soldier or the corps for employment in war.

5. Developing to the greatest perfection the value of non-commissioned grades and specialists, and carrying out their training parallel with that of the men, so that the instrument of battle and the workman whose fate it will be to manipulate it being formed for one another, simultaneously and separately, may be ready at the same time to perform their office.

Revue Militaire Suisse.

The January number opens with an interesting article on the "Fall of Russian Sea Power." The rise of the Russian naval power is briefly traced from the days of Peter the Great to the present time. It is noted that the Russian is not and never has been anything but a landsman. At the date of the outbreak of hostilities in February 1904 the Russian fleet occupied the third place among the world's navies. The suddenness of the rupture was incontestably due to the fact that Russia had already largely increased her Far Eastern squadron and was endeavouring still further to add to its numbers. The

Japanese with a fleet ranking only seventh in importance could not afford to risk losing the command of the sea by delay. A Russian squadron was actually on its way to Port Arthur when Admiral Togo struck the first blow.

The origin of the Russian misfortunes lay in the fact that the fleet was surprised at a time when the vessels composing it were distributed between Vladivostok, Chemulpo and Port Arthur. To make matters worse the cruisers were mostly at Vladivostok, while the heavy battleships lay in Port Arthur, and Port Arthur is far from being an ideal haven with its narrow entrance and its openness to bombardment from the sea. The Russians had 7 battleships, 6 protected cruisers and some 20 torpedo-boats in Port Arthur; 3 large cruisers, one small ship and some torpedo-boats in Vladivostok and a cruiser and a gun-boat at Chemulpo.

The fatal error of basing the chief part of their naval forces on a port, which though favourably situated was entirely unsuited to the requirements of a naval base, could have but one result for the Russians. The outcome of the Japanese torpedo-boat attack is well known. Two battleships and a cruiser were put out of action for many months. The next day the "Varyag" and the "Koreitz" were destroyed in Chemulpo. The Japanese attempts to "bottle-up" the Russian fleet in Port Arthur were never entirely successful, but Admiral Makaroff's sorties only ended in the loss of the battleship "Petropavlovsk" and the death of the gallant sailor himself. On the other hand Reitzenstein twice escaped from Vladivostok and inflicted some loss on the Japanese by sinking transports.

The next move, in July 1904, was a bombardment of the Russian fleet as they lay in Port Arthur by the Japanese siege guns on land. A sortie with a view to taking refuge in Vladivostok was the only possible alternative. On the 10th August Admiral Witheft weighed anchor and went out. Admiral Togo had 5 battleships, 11 cruisers and some 40 torpedo-boats. The action ended in the Russians returning to port with the loss of the Admiral himself and the battleship "Tzarevitch," the cruisers "Askold", "Diana" and "Novik" and some torpedo-boats, while the Vladivostok squadron which had come out to meet the Port Arthur fleet fared little better. The "Rurik" was sunk, the "Rossia" and "Gromoboi" badly damaged were compelled to retreat to Vladivostok. The destruction of this the first Russian squadron was completed when in December 1904 the Japanese seized a hill which directly commanded the port.

Meantime every effort was being made in St. Petersburg to equip another squadron. Every available vessel, however old or obsolete, was pressed into the service. Eventually Admiral Rozhdestvenski started with a fleet of 7 battleships of sorts, 12 protected cruisers and a dozen destroyers. He was followed by a squadron, under Admiral Nebogatoff, of 4 battleships, mostly coast defence ships, and 3 cruisers.

The 18,000 miles' voyage to the Far East was a gigantic undertaking in the most favourable circumstances. But with inferior vessels and more inferior crews Rozhdestvenski's achievement was no

small one. He started his eight months voyage on the 14th October 1904. On the 21st the Dogger Bank incident showed clearly the quality of the material composing his command. The fleet divided into two at Tangier and one squadron went round the Cape. The two divisions met again in French waters at Madagascar. The use made by the Russians of French ports has given rise to many allegations of violated neutrality.

But the English principle that a belligerent fleet may not stay longer than 24 hours in a neutral port is not subscribed to by other nations. The sole condition generally recognised is that the belligerent fleet after quitting the neutral port should proceed without delay to the nearest port of its own nationality. As a matter of fact even this condition was not strictly adhered to by the French. This war indeed has again shown clearly that conditions of neutrality are dependent on the power to enforce them. Had France been a weaker nation she could not have taken up the attitude of benevolent neutrality to the extent that she actually did.

The article closes with an excellent description of the final catastrophe at Tsushima on the 27th May 1905. Briefly out of 11 Russian battleships and coast defence vessels, 7 were sunk and 4 captured. Of 9 cruisers, 5 were sunk and 3 disarmed in neutral ports: 6,142 prisoners fell into Japanese hands and 4,508 were killed or drowned. The victory of the Japanese was complete. The Russian naval power no longer exists. But the superiority in this case, as always, lay in the men and not in any technical advantage as, for example, the greater range of the guns. Iron discipline, absolute devotion to duty and well-developed technical knowledge, all qualities which conduce to confidence, wrested victory from idleness and indifference. They destroyed the childish belief that confidence, discipline and knowledge can be replaced at the last minute by purchases of material, patriotic phrases and recalling the valour of our ancestors.

Another article gives a description of a new Ehrhardt mountain gun. The chief advances made on former patterns are said to be:—

1. A more perfect system of laying, with panoramic sights.
2. Larger angles of fire.
3. Increase in the length of recoil, so that the gun is absolutely motionless at all angles of elevation.
4. Use of lightened recoil springs made from a special alloy of steel.
5. Improvement of the arrangements for transport, chiefly thanks to a lighter pack saddle.
6. Use of a better and a stronger shield.
7. Improvement of the ammunition.

An article on the manœuvres of the 2nd Swiss Army Corps in the country round Berne occupies a considerable portion of the February and March numbers. The conclusions arrived at do not appear to offer anything of especial interest except as regards the use made of cyclists. There were apparently two cyclist companies,

roughly 100 strong. They proved to be of great value, more especially as an adjunct to Cavalry. It was found that, notably at night acting without lights, the cyclists were able to render great service to the Cavalry as scouts. The bicycles approached unheard and penetrated the enemy's outpost line. Very often most valuable information was obtained. Cavalry patrols were not infrequently captured by cyclists lying in ambush in ditches behind hedges, &c. On one occasion a cyclist detachment surprised a brigade of Cavalry and punished it severely without receiving a single shot in return. On the other hand, another day the cyclists evacuated a rear-guard position too soon and thereby gave the enemy an advantage which was never lost. It is pointed out that cyclists must take advantage of their extreme mobility and hold on till the last minute, long after ordinary troops could do so.

The author remarks that cyclists should wear the same uniform as the Infantry. If this is done an enemy cannot distinguish cyclists in occupation of a position from ordinary Infantry. The result of the experiment has been to show that cyclist troops require a larger allowance of ammunition than Infantry. 120 rounds on the soldier and 60 more in the accompanying automobile are the figures proposed. A great difficulty has been the lack of officers for cyclist corps. It is recommended that particular attention should be paid to this point in the future. The article closes with a pious hope that immediate steps will be taken to increase the number of cyclist troops more especially in view of the weakness of the Swiss Cavalry as compared with that maintained in neighbouring States.

The February number devotes some space to the field howitzer, with a detailed description of the chief patterns now in existence. The opening paragraphs explain how, after the introduction of the "long recoil" in field guns giving a motionless carriage on firing, it was a natural consequence that this system should be applied to howitzers. Unfortunately, however, the conditions under which howitzers are employed render the problem very difficult of solution. If the length of recoil is increased to a maximum to provide for fire at high angles, the carriage becomes unstable at low angles. The trail spade comes out of the ground and the carriage recoils. Or if the spade holds, the whole carriage rises, and naturally is thrown out of line. Again there are other difficulties. The gun should be able to recoil between the cheeks of the carriage at all elevations. The gun being short the "long recoil" must be arranged for without disturbing the centre of gravity. Special elevating and sighting gear is required to provide for the varying angles of elevation. This apparatus must not hinder the loading operations. Unless the trunnions are placed so far to the rear that the howitzer can be loaded at all angles, an arrangement for throwing the elevating gear out of action during loading will be required. A powerful recoil spring is necessary to run the howitzer up at high angles. The heavy shell postulates special strength in the metal of the piece. And so on.

The three systems which have endeavoured to solve the problem are :—

1. Ehrhardt. Automatic variation of recoil with the angle of elevation.
2. Krupp. Constant recoil. Trunnions carried to the rear.
3. Cockerill. A combination of the other two.

Experience has yet to prove which of these is best suited to the peculiar conditions of howitzer fire.

In the March number an interesting review of the wedge systems of breech-closing arrangements is given. The introduction of Q.-F. guns was expected to be the death-blow of wedge mechanisms. Two-movement breech-closing arrangements, such as the wedge of that period, were bound to give place to single-motion screws. But the single motion wedge introduced in the German model 1898 light howitzer produced a change of opinions. Since then other single-motion wedges have been invented which compete on equal terms with the single-motion screws. The article gives full details, with excellent plates.

The Swiss Mountain Artillery is about to be rearmed and reorganised. The Federal Chambers have voted 13,592,000 francs for this purpose, and for Infantry mountain equipment. The gun will be on the model of the field gun, with hydraulic brake and recoil spring, and will be practically motionless on firing. The number of guns to be acquired is 43. The number of batteries will be considerably augmented, and the strength of units increased. 900 rounds per gun will be provided. Batteries will probably consist of four guns. The number of rounds carried with the batteries and in the ammunition columns comes to 250 per gun.

Curiously enough, the Swiss Army has hitherto had no Alpine Infantry, equipped as such, for mountain work. It has, however, now been decided, in view of the mountain troops maintained by neighbouring states, that a proportion of Swiss Infantry will be equipped for this duty. It is not yet certain whether the equipment will be permanently in the possession of the troops, or only issued when required. It is proposed to provide for three brigades of Infantry. A special committee of officers, who are experts in mountain work, sat to decide what the equipment should comprise. Transport saddles, alpenstocks, snow spectacles, gloves, and special portable sanitary equipment are some of the articles proposed.

The Federal message also surveys the reserves of war material in the light of the experience in the recent war. The general conclusion is that with the heavy expenditure of ammunition which obtains in modern warfare sufficient reserves are an imperative necessity and that the existing stocks do not fulfil this condition. The figures recommended are 750 rounds per rifle for first line and land wehr, 300 for landsturm, 80,000 rounds per machine gun and 1,200 rounds per gun.

Some remarkable statistics are furnished with reference to the German expedition against the Hereros. It is compared with the 1864 campaign.

	Herero Expedition.	War of 1866.
Numbers employed ..	14,537	61,500
Killed and missing...	65 officers, 577 men	37 officers, 705 men.
Wounded ...	73 „ 646 „	148 „ 1,988 „
Died of illness ...	638	310

This last figure is the more remarkable when the progress in medicine and surgery since 1864 is taken into consideration.

As regards horses 15,373 were lost out of 21,655. The budget figures are equally worthy of note. Up to 31st March 1906, 217 million marks (say £10,850,000) were spent. In 1906-07 some 93 million marks were asked for, but of this 15 millions were refused.

The war still continues, the most dangerous rebel Morenga having some 600 rifles under his orders. There are 14,400 German troops in the colony with 22,500 horses, etc.

The February and March numbers devote some space to the French General Langlois and his views on the question of heavy field ordnance. The General has recently published a series of articles in the *Temps* two of which deal with this subject. He comes to the conclusion, based on both theory and practice in actual war, that heavy ordnance in the field is inefficient and fails to meet requirements. He would prefer that money should be spent in increasing the number of field guns, rather than in providing heavy guns. To begin with, finding the range has nothing to do with the weight of the projectile, and takes much longer with heavy guns. For instance, if 20 rounds have to be fired to find the range, the 15 cm. howitzer will have wasted 800 kilogrammes' weight of projectiles, and taken 10 minutes to do it, while a field battery will have fired only 150 kilogrammes' weight, and taken two or three minutes to do it.

Then the General urges that against infantry in the open a Q.-F. battery with 7.5 cm. guns is preferable to a battery of 15 cm. howitzers. Against artillery, a howitzer can fire either shrapnel or high explosive shell. In the former case the bullets have not sufficient remaining velocity to pierce a shield, in the latter the chance of a direct hit on gun or waggon is extremely slight. Thus the General instances two batteries, firing at one another, both in the open, one with 7.5 Q.-F. shielded guns, the other with 15 cm. howitzers, and no shields. He is certain that the howitzers would be out of action before they had found the range. He arrives at the same conclusion when considering the case of batteries under cover.

Even against inanimate objects General Langlois does not believe in the superiority of the heavy projectile being absolute. A 40 kilogramme shell will make a crater some 5 metres deep. But a simple 6 kilogramme high explosive shell as used by the Japanese will make a crater about 3 metres deep; so that 3 Japanese shells would give as great a result as the one 40 kilogramme shell. But only 18 kilos will have been expended. Lastly, the author objects to the weight of heavy howitzers on the score of mobility.

GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR, *p.s.c.*, D.A.Q.M.G., I. B.

Internationale Revue ueber die gesamten Armeen und Flotten (February, March, April and May, with Supplement):—The number for February has an interesting notice of General Langlois' scheme to convert 18 Rifle battalions of the French army into Cycle battalions. These battalions are to be used as supports to the Cavalry or combined with artillery and cavalry as detachments for reconnaissance and flank-guarding purposes. A trial battalion under Major Gerard was formed of 4 companies, of 4 officers and 120 men each. The usual formation in column of route was in threes, when the battalion covered 1,100 yards of road; in single file, however, it strung out to a column $1\frac{1}{2}$ miles in length. The average rate of march was from 8 to 10 miles an hour.

Great efforts are being made in Russia to improve the position of the soldier. Besides improvements in rations and in lodging, the pay of the Russian soldier has now been raised; whereas formerly the Sergeant-Major got the equivalent of 50 shillings *per annum*, he will in future receive 150 shillings; the pay of the ordinary soldier has also been raised from 4s. 6d. to 12s. 0d. *per annum*.

A trained General Staff is coming into being in the Turkish Army. Eleven officers have passed out of the new Staff College at Parcaldi and have been allotted to the 2nd, 3rd, 4th and 5th Army Corps.

From the March number we learn that Belgium since 1903 has been carrying out exhaustive trials of various systems of field guns. Last year, by elimination of the non-successful, the competing weapons were reduced to guns produced by Krupp and by the works at St. Chamond. After further searching trials—in the driving trials the guns covered more than 2,800 miles!—the Krupp system was finally decided upon. Complete accounts of these trials can be obtained in the *Belgique Militaire* for the 16th July and 20th August 1905.

In the French Army the late war has led to an increase of the number of tools carried by each Infantry company from the small former equipment of 8 spades and 8 picks, with other articles in proportion, to 112 small spades, 32 picks, 16 fascine knives, 4 axes, 1 saw, 4 wire-cutters, and 12 hatchets.

The April number tells us that the Japanese Infantry Company of 217 men carries 68 spades, 17 picks, 5 saws, 5 wire-cutters, and 17 hatchets. In addition each battalion has 48 spades, 16 picks, and 8 hatchets. It is looked upon in the Japanese Army as a particular honour to be allowed to carry the wire-cutters.

In France each of the two Artillery regiments of an Army Corps, in order to ensure the proper co-operation between Artillery and Infantry training in peace time, has been placed under one of the two Divisional Generals of the Corps.

The May number contains an account of the new Italian automatic rifle invented by Major Cei-Rigotti and presented by him to the Italian War Ministry. With its present armament of a 6-shot magazine rifle an Italian Regiment can in two minutes fire off 432,000 shots, but with the 25-shot automatic Cei rifle the same unit could in the same time expend 1,125,000 rounds. Major Cei-Rigotti has also invented an arrangement by which his automatic gear can be attached to the present Italian rifle. It is true that the converted arm is somewhat heavy, but it is no heavier than the old Vetterli which the Italian soldier carried from 1870 to 1890. Owing to the absorption of the recoil by the automatic gear, the converted arm lends itself to more accurate shooting than the present arm.

In Russia every effort is being made to improve the quality and quantity of the Russian officers. In the Infantry the Inspectors of Musketry have been done away with and in their place Inspector-Generals of Infantry have been appointed, who will not only deal with all musketry but also with all other Infantry matters with a view to uniformity in training and the spread of practical and theoretical knowledge. The newly appointed officers are Generals selected by the Czar. They will be directly under the War Minister.

German Supplement No. 70 contains a full account of Artillery matters in the Russo-Japanese war. The article has some excellent illustrations of Russian guns and Japanese batteries in action.

No. 71 is devoted to a review of the article in the number of the *Journal of the Royal United Service Institution*, regarding the distribution of the horse over the world and of his utility for military purposes. The author makes the assertion that, before the Boer War, the number of horses in the British Colonies of the Cape and Natal amounted to about 388,000; that the loss in horses during the war was 340,000; and that, at the present time, inclusive of the conquered Boer States there are not more than 250,000 horses in all South Africa.

No. 72 deals with matters of permanent fortification. In three articles the fortifications which surround Antwerp, those which guard the Austro-Italian frontier, and finally, those which cover the eastern frontier of France are described. The new arrangements for the defence of Antwerp on the right bank of the Scheldt towards the north, east and south appear to be very complete. The eastern side on the left bank is, however, left rather unguarded, whereas an attack on this side, as the author remarks, is by no means impossible!

No. 73 gives a long review of the experiences gained in the Russo-Japanese war. In the first portion the slowness which characterised this war, the absence of all pursuit after victory and the causes which led to this departure from the principles of war are well brought

out. The keynote of the whole is, however, sounded on the first page. "There is one thing this war teaches with convincing clearness, that is, that the best equipment and arms and all the appliances of modern science are but means to an end and are of no importance, if the living soul and spirit are wanting." The latter portion is devoted to a discussion of the scientific appliances which were more largely used in this war than in preceding campaigns and which will ever in future be more and more generally utilised.

The French Supplement No. 83 has an interesting article by Lieutenant-General von Hösslin on the present day importance of railways in war. Among other important points the author notices the effect of speed on military transport by rail. He shows that the rapidity with which a concentration can be carried out depends much more on the number of trains, which can be with safety dealt with at one time on the line, than on the rate at which the trains can travel. He instances the transport of an Army Corps from Königsberg to Metz. This Corps will require 100 trains. Supposing that the journey can be done in 60 hours, but that only 25 trains can be despatched each day, the concentration of the Corps at Metz will be complete in 6½ days. Now suppose that the speed is so reduced that the train takes 72 hours to reach Metz, but on the other hand the number of trains a day is increased to 40, we find that the concentration can be completed in 5½ days—a clear gain of one day.

This number has also a translation of an article by General von Blume, which was originally published in the *Militär Wochenblatt*, and which shows some of the difficulties that von Moltke had to contend with, in the preparation of his schemes for war, owing to the way he was kept in ignorance of the political situation and of the directing policy of the Government by both the War Minister and the Minister for Foreign Affairs.

The spade as the new arm comes in for good deal of notice in this number. A combined tool capable of doing the work of a spade, a hatchet, and a pick is recommended.

The following is a table of the losses suffered by the Germans in their Army of about 16,000 men in South-West Africa. The number who have been invalided home is unfortunately not shown.

	Officers.	Medical officers.	Civilian officials.	N.-C.O.s.	Soldiers.	Total.
Killed ...	90	3	2	162	657	914
Died of their wounds ...	8	...	1	3	36	48
Wounded but living ...	117	3	2	243	776	1,141
Missing (probably dead) ...	1	...	1	14	96	112
Died of disease ...	31	2	4	131	790	958
Killed in accidents ...	5	...	...	19	83	107
Total ...	252	8	10	572	2,438	3,280

No. 85 commences with an article on the evolution of the combined shrapnel and common shell. This is followed by a short article on the destruction of war balloons by artillery fire. The author points out that the possession of balloons by the Japanese would have very much expedited the destruction of the Russian fleet in the harbour. Without their aid the Japanese had to spend many lives in the capture of 203-Metre Hill before they could gain a position, from which the effect of their heavy shell could be properly observed, and the Russian ships rendered useless for further action. Owing to their vulnerability balloons must be kept at a range beyond 5,500 yards from the enemy, who is therefore forced to employ for their destruction his heavy artillery. In order to be effective against balloons this artillery must use shrapnel, which should be burst in front of and above the balloon. Careful range-finding and good observation are essential to obtain the full effect of fire against these modern means of observation.

In No. 86 is to be found a translation of an article by Colonel Zalesski of the Russian General Staff on the Russian Cavalry in the late war. The author sums up his conclusions as follows:—

- (a) The Cavalry soldier should be taught to ride and to fight, to shoot on horseback and on foot, and should be thoroughly accustomed to exercise his initiative and judgment.
- (b) The Cavalry should be provided with at least two machine guns per regiment.
- (c) The Cavalry must be accustomed to long and rapid movement across country.
- (d) Every effort must be made to lighten the equipment of both man and horse. Heavy equipment is the cause of much of the present want of mobility in the Cavalry.
- (e) More training is requisite to enable the Cavalry to surmount the natural obstacles met with, especially as regards the crossing of rivers.
- (f) The amount of time spent in mere parade movements should be much reduced and more time should be given to learning the important duties of reconnaissance and to practice in moving across country. Everything useless in war should be given up in peace.
- (g) More thorough instruction in the duties, which Cavalry must perform in war, is necessary in the case of the young officers.
- (h) Cavalry should be released from all the petty escort, guard, and detachment duties, with which it is overladen in times of peace, as all such militate against its true military education.

We learn that Switzerland is arming its Mountain Batteries with a new Q. F. Krupp gun on a recoil-absorbing carriage.

Militär Wochenblatt (Nos. 26-56 and Supplements 2-5):—No. 28 reviews the new Russian Artillery-practice Regulations which,

probably as a result of the late war, lay great stress on the practice of indirect fire from hidden positions.

No. 31 announces the commencement at the Russian Staff College of a series of lectures on the Russo-Japanese War by one of the Professors. The failure of the Russians is put down to want of initiative and fear of responsibility on the part of the higher Russian leaders, combined at the same time with a tendency to interfere with the prerogative of their juniors even down to the detailing of battalions and to the tendency to bury themselves in a mass of unnecessary detail; want of proper military education among the officers and the consequent inability to learn from the experiences of the war; to such an extent was this the case that the same faults were constantly committed at the end of 1½ years fighting as had been at the commencement of the campaign; and finally, want of a proper organisation of the duties of reconnaissance and of protection, especially in regard to their flanks which were invariably turned by the Japanese. Petty peace economies had also a great deal to do with the result; for example, the Brigade Commander in the Russian Army has no staff and no office in peace time. These lectures are continued in No. 33.

The bayonet has once more sprung into favour and No. 42 contains a simple and practical method of teaching the art of fighting with this weapon as arranged by Major von Schaumann.

No. 44 deals with the Siberian Railway in the last war. The author endeavours to arrive at an estimate of the work done by this line. He says:—"With the railway, Russia was only capable of setting on their legs in Manchuria and keeping fit for action a fixed number of troops, according to my figures 300,000 men. If this force did not suffice to gain the superiority and to wrench from the Japanese the advantages they had gained in 8 months, there then was absolutely nothing to be done, and the war was hopelessly lost."

No. 51 has an article on the changes in the Russian Army caused by the war. The most striking of these is the very great increase in machine-gun companies. At the beginning of the war Russia had only 5 such companies, at the end these 5 had increased to 114½. This and the previous number contain interesting reviews on questions of Artillery tactics as modified by the experience of the Russo-Japanese war.

The second supplement is devoted to a description of the work done in South-West Africa by the Communication Troops of the German Army in connecting the various widely separated portions of the forces in the fighting with the Hereros and Hottentots by means of telegraphs, telephones, signalling and wireless telegraphy.

The third number deals with the military revolt in Nancy in 1790 and its causes. This is followed by some unpublished letters of Metternich to Schwarzenburg about the Campaign of 1814. The fourth and fifth give accounts of the manœuvres of a Cavalry Division, and of the events in Peking in the summer of 1900.

Die militärische Welt (No. 1):—This is a new illustrated Austrian monthly in German, printed in Roman type. It promises to be an interesting addition to periodical military literature. It is published by C. W. Stern (Buchhandlung Rosner), Vienna. Its scope may best be seen by a reproduction of the table of contents of this first number.

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| <ol style="list-style-type: none">1. Preface.2. The First Attempts at Revolution in Hungary and Vienna.3. The Localisation of Italian Garrisons.4. War dogs on Active Service.5. The German Emperor on the Bayonet.6. Cavalry in the late War.7. The Military Power of Montenegro, Servia and Roumania.8. Pioneer Troops. | <ol style="list-style-type: none">9. Notes by a Sister of Mercy in Manchuria.10. Vienna.11. Episodes of the War in Manchuria.12. Military Notes.13. Short Nights (<i>Poetry.</i>)14. Karl, Baron Torresani.15. No Story.16. Arrogance.17. Reviews of Books. |
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ITALIAN PAPERS.

BY CAPTAIN C. H. ALEXANDER, 36th JACOB'S HORSE.

The "Rivista Militaire," January to April 1906.

The *Rivista Militaire* for January 1906 comes out in two numbers in honor of its "Jubilee," having been founded exactly 50 years ago. The first number contains only short notices of various articles which have appeared in its pages since it was first published. The second contains some notes on Military Psychology, a few remarks on that well worn subject,—“The Tactics of Attack and Defence,” which, however, throw no new light on the subject and an interesting article on the French possessions in West Africa. The French have undoubtedly been paying a good deal of attention lately to their West African colonies. Several railways have already been built whilst the construction of others is being pushed on so that the work of opening up what was once called “The Dark Continent” is proceeding apace. The author gives a short history of Senegal, of the territories between Senegal and the Niger, and between the Niger and lake Tchad, of French Sudan, French Guinea, the Ivory Coast, Dahomey, and Western Mauritania (North of Senegal). He also gives an account of the organisation and administration of the colonies, their water ways, ports and military stations. He describes the Anglo-French treaty of 1904 by which the French in return for concessions made with regard to Egypt, obtained important compensations in West Africa. For instance the Port of Yarbata and the Isles of Los were ceded to France. The former is at the head of the navigable portion of the river Gambia, (200 miles from the sea) on which formerly France had no harbour. This assures her of easy means of communication with the “Hinterland” of Senegal. The isles of Los on the other hand are opposite the French port of Konakry, and being only 3 miles distant, completely command its entrance. In addition, France has obtained a notable increase of territory in the vicinity of the Niger and Lake Tchad.

There are some criticisms—unfavourable, but somewhat captious—on the elementary part (squad drill and rifle exercises) of the new Italian Infantry training. Also an article on so-called “unprofitable expenses” meaning the cost of the education of the soldiers. The author very rightly urges that education tends to raise the standard not only of the Army but indeed of the whole nation, and that such expenses should not by any means be called unprofitable. The money so expended should be regarded as a very valuable asset to the nation in the shape of an increase of knowledge which should bring in its train a great increase of prosperity.

Lastly, there is a letter by Lieut. Fumo on the advantages of teaching officers to act as "chauffeurs" and on the general management of motor cars. He says motor cars are bound to play such an important part in all future wars that officers should be encouraged to attend automobile schools for purposes of instruction, and he suggests that all motors should be inspected, classified and numbered and that lists should be made specifying their capabilities, whether they are fit for military service and whether they could be easily adapted for military requirements, or not.

There is an interesting description of the German campaign against the Hereros by a officer on General von Trotha's staff. He tells us how well the natives had planned their rising and with what marvellous secrecy. But once the revolt had taken place, in a most inexplicable way they failed to take advantage of the complete surprise of the Germans. They sacked and burnt a few farms and railway stations and killed the white farmers and railway employés. But if they had attacked at once, the isolated post of Windhoek which was scarcely defended at all, or the fort of Okahandja, they might have captured them by mere force of numbers. The damage they did to the railway was insignificant and yet this was practically the only line of communications that the Germans had with the coast. The Hereros numbered 6,000 fighting men of whom one half were armed with modern rifles. They were not wanting in bravery. The writer attributes their failures to a want of logic so common amongst black races, for instance, seeing that the Germans easily repaired the slight damage done to the railway they thought it was no use trying to do any more, in fact having burnt a few houses and killed a few whites they rested on their laurels. Consequently when the German reinforcements arrived, the Hereros were severely defeated.

The March number contains a retrospect of the battle of Adowa, a long article on temporary field Fortifications, and a more interesting one entitled "Men or Fortifications." This last is a study of the Franco-German frontier and a comparison of the standard of education of the two nations. The writer notes that there are far more fortresses and fortified posts on the French than on the German side of the frontier, but the conclusions at which he arrives are, that a nation should train its manhood, and that it must depend rather on "the man behind the gun" than on earth works.

In April the only articles of interest are:—

(i) On the necessity of having only one system of education throughout the army.

(ii) On the necessity of training men as cyclists and motorists and pointing out how valuable they will be in future wars. The writer urges that bicycles are difficult to hit (with rifle bullets), and when hit are easily repaired, that they can be turned into useful obstacles when acting on the defensive, are invaluable (provided there are good roads) to the rearguard of a retreating force, as it can hold on to a position much later than would otherwise be possible, or to the

Q-1

advanced guard of a pursuing force, or for scouts or despatch riders ; also, one can easily imagine how a large force of cyclists transferred rapidly from one point of the field of battle to another might change the fortunes of the day—always with the same limitation—provided that *good roads* are available.

(iii) The third article worthy of notice is one on mountain warfare which is, of course, of peculiar interest to the Italian Nation, divided from other countries, as they are, by the Alps. The writer urges constant practice for the troops over hill country, and very rightly points out that in the event of a war with either of her neighbours (Switzerland apparently being left out of the question) the first combats must be fought in the mountains and these might be decisive of the fate of the campaign. He advocates a fixed plan of defence for the Alps, points out the dangers of being fascinated with the idea of “a dominating position” and also the error of a too extended line of defence.

In the April number of the “*Rivista de Artiglieria e Genio*” there is a long article on the means of transmitting information and keeping up communication between the various units of fortress Artillery, whether besieged in or attacking a fortress, or even if only attempting to stop the advance of an enemy. The writer enumerates many ways of communication well known to all, such as signalling—by flags, lamps, etc.,—the use of the telephone, the telegraph, both overhead and underground wires—of which he prefers the former as being less costly and more easy to repair when broken—and wireless telegraphy. Of these, the author places the telephone first on the list except for long distances, when he prefers the ordinary telegraph, and for this he strongly recommends the invention or adoption of some system (similar to that of Mercadier’s telephone) by which several messages can be sent on one wire. Next on the list the writer places “visual signalling” and last—because of its unreliability he recommends wireless telegraphy. He, however, adds that wireless telegraph stations should most certainly be prepared if only to intercept the enemy’s messages and to perhaps confuse them.

Another writer describes how, in his opinion, the engineer services should be directed and commanded in time of war, and there is a very good article entitled “considerations with regard to, and deductions to be drawn from, the Russo-Japanese war.” The author describes the general characteristics of the fights which took place, the employment of machine guns with infantry, the use or rather abuse of the cavalry, and he finally winds up his article (for the month) with a long description of the employment of the artillery—mountain and field guns and field howitzers—by both the Russians and the Japanese. The author, who is evidently a keen observer, writes a most instructive article, to which increased interest is lent by some good photographs of Russian and Japanese batteries taken when in action, and there is also a very clear plan of the combat at Janselin on the 31st July 1904.

TACTICAL SCHEME COMPETITION, OCTOBER 1905.

There were 22 candidates of whom only 11 competed. Captain A. H. Radice, the Gloucestershire Regiment, *nom-de-plume* "Roman" has been awarded the prize of Rs. 50 as the winner of this competition. For the information of the competitors, the winning solution is published verbatim (with a sketch of map G) on the following pages. *The noms-de-plume* of competitors are given below for the information of those concerned:—

1. "Vivit post Funera Virtus."
2. "Non deficit Alter."
3. "Punjabi."
4. "Vise à la fin."
5. "Vulcan."
6. "Nec temere, nec timidi."
7. "Forethought without Fearthought."
8. "Ego Accedo."
9. "Roman."
10. "Aut non quem tentes, aut perface."
11. "Arte et Marte."

REMARKS BY THE ADJUDICATING OFFICER.

Among the mistakes most frequently made by competitors were the following:—

Operation orders should give "the intention of the officer issuing the orders, *as far as it is advisable to make it known*."—C. T., 8 (iii). It is, I think, distinctly inadvisable to publish the fact that the column was *en route* to SAIDPUR or to give the strength of the SAIDPUR garrison. This information would be rapidly conveyed to SHAHDADPUR, the force there would be put on the alert and they would very likely blow up the GOLO PIR bridge before the column could reach it. Compare Jackson's orders at the commencement of the Shenandoah Valley campaign. Only *one* candidate omitted this information from his orders.

Many competitors were very hazy on the subject of Lines of Communication. A force which can carry its own supplies for the whole period of its movement does not need a Line of Communication. The scheme gave competitors "ample transport for all requirements." One officer proposed to establish strongly fortified posts at every four miles along his route, but he did not explain what useful purpose these posts were to serve.

On the other hand very few competitors recognised the importance of the GOLO PIR bridge as constituting a defile. On learning that the enemy had secured

Defiles.

all the other bridges, instead of hastening forward to secure GOLO PIR, which offered a fairly good defensive position, most competitors halted at once "to await reinforcements," "to cover the flank of the column." or "to cover FAIZABAD," which according to the scheme did not need assistance. From GOLO PIR the column could have co-operated with any reinforcements from FAIZABAD just as easily as from NIZAMANI or KARAN WASAN. It would also have been on the flank of any force attempting to move from SHAHDADPUR to SAIDPUR.

There was a perfect mania for demolition. Two competitors as soon as their force had crossed to the north of the SHAHO proposed to blow up the GOLO PIR bridge—their only means of getting back! The orders of a third would have justified the Sappers in blowing up the bridge even before the force had reached it, but at any rate it was to be blown up before the column returned! Another, who intended to attack SHAHDADPUR, proposed, in the event of his attack being successful, to blow up the bridges there at once. In such a case as this our first object would be to protect bridges, etc., not to destroy them.

Independent Cavalry is only used with large forces and is then usually several marches to the front.—(C. T. 111, 2 and 3). To label a Cavalry Regiment "Independent Cavalry" and send them off to the front is merely to throw them away. When you want your Cavalry you won't have any left. A few patrols will get you all the information you may want and will leave you mobile troops in hand to use when you get the information. Some officers while they dubbed their Regiment "Independent Cavalry" continued to issue orders to it as if it was at their disposal.

The G.O.C. should command the main force. Some officers proposed to leave the G. O. C. at FAIZABAD in command of $1\frac{1}{2}$ battalions while the main body went off under the command of a Colonel.

Most of the work sent in was very long-winded. Orders or an appreciation should be as concise as possible. The work sent in by the winner was far and away better than that of any other competitor as regards *how* orders and an appreciation should be written.

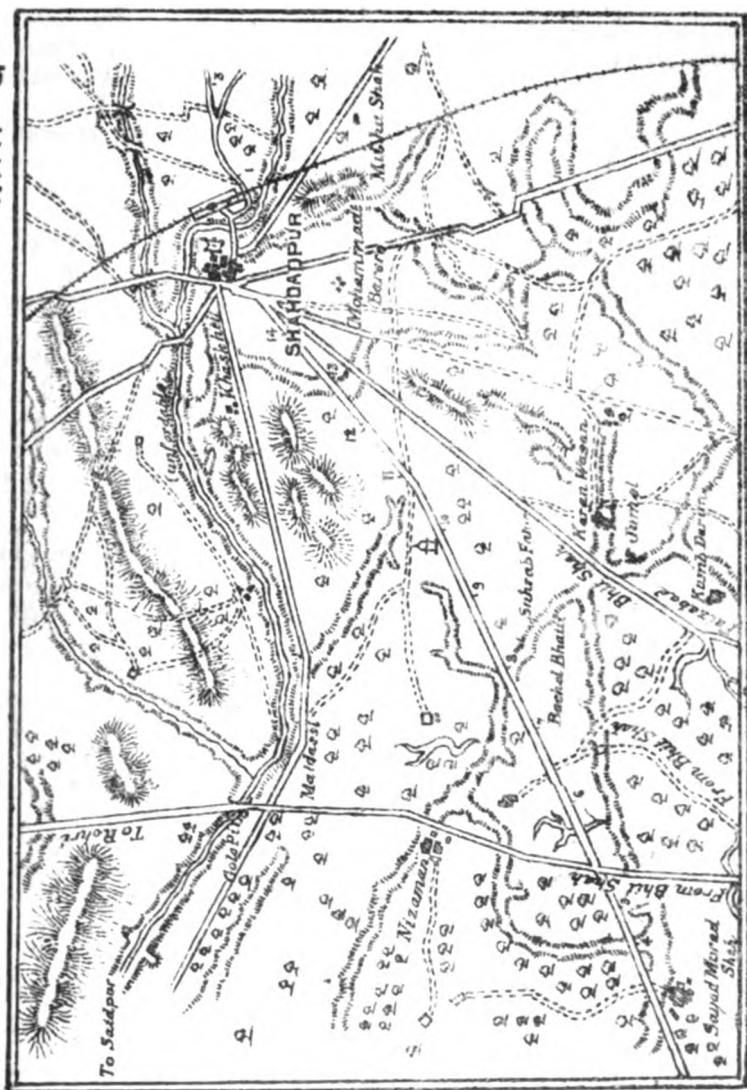
Most of the competitors gave march orders for the column and entirely omitted to provide any flank guards.

I think that the winning solution is open to criticism on the following points:—

From the strength of the enemy as given in the scheme and the fact that FAIZABAD was given as easily defensible the column should have marched as strong as possible. How would it have fared if the 15,000 men had reached GOLO PIR after the column had passed that place?

As stated above I think that the column should have pressed on to GOLO PIR instead of halting at KARAN WASAN.

MAP G



The column was practically a convoy and consequently the transport should have kept with it instead of being parked a mile away at KUMB DARUN. This remark also applies to the march orders of some of the other competitors.

"Punjabi's" solution was in some respects more to my liking than that of the winner, but his orders would have had to be largely rewritten for publication.

SOLUTION BY "ROMAN"—CAPTAIN A. H. RADICE, GLOUCESTERS
REGIMENT.

Operation Orders by Major-General LAW, Commanding

FAIZABAD, 1st November 1905.

No. 28.

1. The main forces of the enemy reported by spies to consist of 100,000 men are besieging RAMITPUR.

A force of the enemy, reported by spies to be 1,500 strong, is besieging SAIDABAD.

2. With a view of taking the offensive it has been decided to concentrate all troops in the district at FAIZABAD.

3. A column, strength as per margin, under the command of Colonel GARDENER, will assemble on the Garrison Parade Ground at 2 P.M. and will march with all despatch on SAIDABAD to bring the Garrison and European inhabitants back to FAIZABAD.

6th Cav. (less 1 Sq.)
119th Bat. R. F. A.
1 Coy. Sep. & Min.
7th Inf.
8th Inf.

4. The Column will carry 10 days' rations.

5. The C. S. and T. O. will make arrangements for the necessary transport for the Column and will, in addition, provide 12 tongas for the conveyance of the European inhabitants of SAIDABAD.

6. The P. M. O. will make all necessary medical arrangements.

7. On arrival at SAIDABAD 24 carts will be placed at the disposal of the European inhabitants: all other empty carts will be loaded with military stores and supplies.

All arms, ammunition and supplies which cannot be taken away must be destroyed.

11 A. M.

J. CLIFFORD, A. A.-G.

Copy by Orderly to :—

All concerned.

APPRECIATION.

As Officer Commanding the Column my first duty is to help the concentration of troops ordered to take place at FAIZABAD, by bringing in the SAIDABAD Garrison.

The enemy 15,000 strong, but weak in guns and Cavalry, have occupied SHAHDAPUR. A detachment 1,500 strong is besieging SAIDABAD. Their main body is besieging RAMITPUR, 150 miles east

of SHAHDADPUR. It has been reported that the enemy in front of me intends remaining at SHAHDADPUR on the 3rd, this is partially confirmed by my reconnaissance, [*which must have lasted up to very nearly 12 noon,] when the enemy showed no signs of moving.

My Column arrived at BHIT SHAH at 9 A.M. Reinforcements could reach me 7 hours after I sent off a message for them. No help is to be expected from SAIDABAD.

The enemy may follow the following courses :—

(a) Remain at SHAHDADPUR.

(b) Advance in force or send a detachment *via* MALDASSI to SAIDABAD.

(c) Advance in force on FAIZABAD.

For reasons stated above the enemy is likely to follow course (a) in which case the O. C. FAIZABAD may decide to attack him on 4th November.

In following course (b) he would have to make a flank march across my front and leave a strong force in his rear and practically across his line of communication.

In following course (c) he would drive my Column back on FAIZABAD, and probably besiege it, and prevent the contemplated concentration.

The courses open to me are—

(1) Continue my march on SAIDABAD.

(2) Retire on FAIZABAD.

(3) Take up a defensive position across the SHAHDADPUR—FAIZABAD road and await reinforcements.

Course (1) is bad as the enemy by a short march would cut my communications and prevent my rejoining my main body.

Course (2) is if possible worse as it would leave the enemy absolutely free to march wherever he liked.

By adopting course (3) I keep touch with the enemy, can watch his movements, can prevent him reinforcing the force besieging SAIDABAD and can delay his advance on FAIZABAD and so give the O. C. FAIZABAD time to mature his plans.

Therefore I decide to send at once for reinforcements, acquainting my G. O. C. with the situation, and having selected a position near KARAN WASAN I entrench it and by vigorous reconnaissance endeavour to deceive the enemy as to my strength.

Operation Orders by Colonel GARDENER, Commanding Column

KARAN WASAN, 3rd November 1905.

No. 3.

1. The enemy, 15,000 strong but weak in Cavalry and Artillery has occupied SHAHDADPUR

2. The Column will entrench a position near KARAN WASAN.

* Omit—See the hour at which orders were issued—9-45 A.M. Ed.

3. The Cavalry will keep in touch with the enemy and will also send a patrol in the direction of MALDASSI to watch the SAIDABAD road. Half hourly reports will be sent in.

4. The 119th Battery will take up a position covering the approaches from SHADAPUR and will entrench.

5. The 7th Infantry (less 4 Companies with General Reserve) will fortify the right section of the position extending from KARAN WASAN to the KUMB DARUN—SHAHADAPUR road, both inclusive.

The 8th Infantry (less 2 Companies Baggage Guard) will fortify the left section of the position extending from the KUMB DARUN—SHAHADAPUR road, exclusive, to BACHAL BHAITI and will also fortify SUHRAB FAKIR as an advanced post.

4 Companies 7th Infantry will form a covering party and if attacked will retire through the position and form the General Reserve in the nullah immediately south of JUMAL.

$\frac{1}{2}$ Company Sappers and Miners will help to fortify KARAN WASAN and the other $\frac{1}{2}$ Coy. will fortify SUHRAB FAKIR. On the completion of this task they will join the General Reserve.

6. The Transport escorted by 2 Companies 8th Infantry will park near KUMB DARUN.

7. The O. C. Column will be at JUMAL.

C. BLYTH, MAJOR,
Column Staff Officer.

Issued at 9-45 A. M.

Verbally to—
O. C., 119th Battery.
O. C., 7th Infantry.
O. C., 8th Infantry.

By Orderly to—
O. C., 6th Cavalry.
Column Supply and Transport Officer.

TACTICAL SCHEME COMPETITION, JULY 1906.

References are to a Map which will be supplied to intending competitors, who should forward their names together with the sum of Re. 1, to the Secretary of the Institution, from whom they will receive all instructions.

GENERAL IDEA.

A RED Force, consisting of one Division, has been defeated by a BLUE Force of two Divisions and is retreating northwards by the roads parallel to the LONDON and BRIGHTON Railway.

SPECIAL IDEA.

On arriving at BONEHURST BRIDGE at 1 P. M. on the 15th October, with the Main Guard of the RED REAR GUARD, strength as per margin, the Commanding Officer, Colonel Z, received the following message :—

RED REAR GUARD TROOPS.

1 Battery, R. M. A.
2 Squadrons Caval-
ry.
4 Companies Mount-
ed Infantry.
1 Det. Mounted Sappers (40 strong).
1 Battery R. F. A.
2 Bns. Infantry.
Medical details.

RED HILL CHURCH;
15th October.

No. 179.

"Owing to a break-down of the transport it is absolutely necessary that you should delay the advance of the enemy till nightfall (7 P. M.)"

Despatched

(Sd.) A. B. C.

11-15 A. M.

A.-A. G., 1st RED Division.

Heavy rain has flooded the streams, which are only crossable by the fords and bridges.

Colonel Z's Cavalry is in touch with the Cavalry of the BLUE enemy about 6 miles south of the south edge of the map.

QUESTION I.

As Staff Officer to Colonel Z write,—

- (a) A brief appreciation of the situation (for his use).
- (b) The orders which would be issued if your appreciation is accepted.

QUESTION II.

By 5-15 P. M. in the afternoon the BLUE enemy are threatening to outflank you on both flanks and have developed such strength of infantry and guns that the further retention of any position you may have taken up would be dangerous.

- (c) What orders would you now issue to carry out the task entrusted to you?

[This competition will close on the 1st December 1906. Solutions received after that date will not be considered.]

THE JOURNAL

OF THE

United Service Institution of India

1906.

No. 165.

Owing to unavoidable circumstances, the date of this number, the date for the publication of Solutions of the Tactical Scheme, October 1906, is extended to the 1st of January 1907.

—(continued).

ART.

EE, V.D., FIRST PUNJAB
RIFLES.

year 1876, there was a pretty one of the sons of the Prophet, the girls of Bulgaria are not, as a rule, remarkable for any personal beauty either of form or face. But this girl in question was evidently an exception to the rule.

Now in the proselytising spirit which distinguishes every true Mussulman, with whom religion always occupies the first place, her Turkish lover had succeeded in converting the maiden to his own way of thinking, which was probably a task of no great difficulty; so she had to go to the nearest large town, Salonika, to get her conversion properly registered and ratified.

The ancient town and seaport of Salonika has always had, like other seaport towns, a very mixed population, the lower classes of which were much given to excesses of all sorts, turbulence, lawlessness and rioting, often carried to extremes. Even so far back as the fourth century they rose up and murdered the officers of the Roman garrison, because the governor had imprisoned a circus rider who was

R-1

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SPECIAL IDEA.

On at

**RED REA
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1 Battery,
2 Squadron
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4 Compani
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1 Det. Mou
pers (40
1 Battery
2 Bns. Inf
Medical d**

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THE JOURNAL

OF THE

United Service Institution of India

Vol. XXXVII.

October 1906.

No. 165.

THE BALKANS—(*continued*).

SECOND PART.

BY CAPTAIN J. FITZGERALD LEE, V.D., FIRST PUNJAB
VOLUNTEER RIFLES.

I.

Cherchez la femme !

In the early part of May in the year 1876, there was a pretty Bulgarian girl who fell in love with one of the sons of the Prophet, in the lands south of the Balkans. The girls of Bulgaria are not, as a rule, remarkable for any personal beauty either of form or face. But this girl in question was evidently an exception to the rule.

Now in the proselytising spirit which distinguishes every true Mussulman, with whom religion always occupies the first place, her Turkish lover had succeeded in converting the maiden to his own way of thinking, which was probably a task of no great difficulty ; so she had to go to the nearest large town, Salonika, to get her conversion properly registered and ratified.

The ancient town and seaport of Salonika has always had, like other seaport towns, a very mixed population, the lower classes of which were much given to excesses of all sorts, turbulence, lawlessness and rioting, often carried to extremes. Even so far back as the fourth century they rose up and murdered the officers of the Roman garrison, because the governor had imprisoned a circus rider who was

R-1

a popular favourite. And in modern times they have proved to be no better than they were under the Romans. No matter how severe the Vali * may be and however Draconian his laws, murder, massacre and bloodshed remain the order of the day. The lanes and suburbs of the town have been the scenes of many an undiscovered murder, when night has been made hideous by the dying screams of the victim falling in the darkness under the blow of the cudgel or the stab of the cowardly knife. The average Greek or Italian sailor is a reckless, devil-may-care sort of fellow, setting but small value on his own life or the life of others; those of the Turks who take up a sea-faring life are, if possible, worse, owing to fanaticism; and the narrow streets and quays of Salonika swarm with such as these.

In the middle of the year of grace 1876 a great majority of the fixed population of the town itself was Mussulman—and sullen, bigoted, restless Mussulmans to boot. It was to this place the Bulgarian girl came to abjure the faith of her fathers and embrace the Mohammedan creed.

A number of Greeks in Salonika heard of the new convert to Mohammedanism, and they determined to prevent the marriage. They mobbed the girl on her way from the railway station to the Turkish governor's house; they tore her by force from her escort; brought her, against her will, to the house of the American Vice-Consul; then took her away from there and hid her in one of the hovels of the Greek quarter.

The news of this abduction, of this public outrage in broad daylight, became spread abroad in the city, and naturally excited the greatest indignation among the Mussulmans. And these were fully justified in their indignation; the grossest insult had been offered to their religion and their institutions, by a small mob of strangers belonging to a people whom they hated with the bitterest hatred, whom they despised most of all. They kept their temper uncommonly well. They called a meeting. On the day after the outrage about five thousand of them came together, proceeded to the official residence of the Governor, and demanded, firmly, but with the greatest calmness and good temper, that the girl should be given back to her friends and escort, and declared that the abduction was a public insult to their country and religion. The Governor, with great tact, succeeded in quieting them down for the time being, assuring them that their demands should be complied with; upon which the meeting was adjourned, and the greater part of the Mussulmans went into a mosque close by. All this time the Greeks had hidden in their hovels, as rats scamper into their holes. They could well say, with *Marc Antony*—

“Now let it work: Mischief, thou art afoot,
Take what course thou wilt!”

Now the French Consul and the German Consul in Salonika were both what are commonly called “fussy” men, full of their own importance, fond of interfering in matters which did not concern them,

* Turkish governor.

unmindful of their prototype whom the wise Hebrew King compares to one who taketh a mad dog by the ears. They both went into the mosque where the excited crowd was assembled. The Greeks, to save themselves, had caused it to be reported that the Bulgarian girl was hidden in the house of the German Consul, and the crowd in the mosque had heard of this. What followed was told to me by some of those who were present at the time; and I took down in writing what they said. The French Consul was excited and could not make himself understood; he was jeered at, hooted, and pelted with clay. The German Consul then assumed a haughty and threatening tone, the very worst thing that he could have done under the circumstances. The passions of the angry mob boiled up; a friendly Turk advised the Consuls to go away, and pushed the German, not with any violence, towards the entrance of the mosque. The German struck the Turk with a heavy stick across the face, and then the Mussulmans saw red. It seems that the Consuls took a good deal of killing, the Frenchman was the first to go down, and was soon kicked and beaten into unconsciousness; but the German fought like a tiger, and did not fall till his face was torn open by the jagged bottom of a broken bottle.

The remains of the Consuls were mutilated and hacked to pieces, "so small," said one of my informants, with truly oriental hyperbole, "that they could be put into tobacco pipes."

At the news of this all Europe burst into flames. A French squadron and a German squadron were sent flying to Salonika harbour; and the British Mediterranean fleet was ordered to Besika Bay, a place about twenty miles south of the entrance to the Dardanelles.

Now I am far from suggesting that it was the abduction of a Bulgarian girl which caused the Russo-Turkish War of 1877. Neither would I suggest that a lighted wax match caused the destruction of the former city of Chicago. But a drunken Irish bricklayer threw the lighted match into some stray paraffin oil, and the flame thus caused burned the city to the ground. In 1877, the Bulgarian damsel acted the part of the lighted match, and the inflammable material was all round her and stretching even to the most distant parts of Europe.

II.

It will be fairly correct to apply to the European diplomacy of this time, with regard to Turkish affairs, the terms which Kipling's Highland sergeant applied to a bayonet charge—"a dairty business." Shortly after the murder of the Consuls, on the 11th of May, the representatives of three great European Powers met in Berlin. They were Bismarck, Gortschakoff and Andrassy, each in his own peculiar way an index of the organised brute force of Eastern Europe. If ever there was a man who bore his character in his face that man was Bismarck. Heavy, forcible, almost brutal in expression, yet showing an indescribable something in common with the face

of Gambetta, probably the index of will-power; but absolutely without refinement, all brute force.* It was a merciless face, and cold; but its coldness was that of the snowstorm, while the coldness in the face of his colleague, Von Moltke, was that of the frozen lake in which the eyes glittered like two points of blue ice. Gortschakoff was altogether different. Meeting him in a railway train or a restaurant, one might have easily taken him for a professor of languages at a ladies' school. Nothing but kindness and geniality seemed to gleam out of his gold-rimmed spectacles. But no amount of smiling could ever hide the high cheek bones and slit eyes which showed his Asiatic blood. The Austrian, Andrassy, deserved much more than did Lord Salisbury the description which Bismarck gave of the latter—"a lath painted to look like iron." No clay in a potter's hand was ever easier to mould than was Andrassy in the hands of Gortschakoff. The Austrian was no statesman: he was as vain as a pretty school girl; and Bismarck, who was rather bold, pleased him immensely by complimenting him on his thick, curled locks and beautiful whiskers. Of the trio, he was an abject tool in the hands of the other two. They used to say of him at the Russian Court, "when it rains in St. Petersburg Andrassy puts up his umbrella in Vienna." These then were the three physicians who met to prescribe for the sick man.

After much deliberation they drew up and published a document which is now known in history by the name of the Berlin Memorandum. This extraordinary document, unparalleled in the whole history of modern European diplomacy for dishonesty and impertinence, began by stating that whereas the Sultan of Turkey promised to introduce reforms into the administration of his European dominions, he by this promise gave to the European Powers a right to insist that he should keep his word. That is, the very compliance of the Sultan was to be used as a means of bullying him. Part of the Sultan's dominions, Herzegovina, was in a state of civil war; and owing to this circumstance it was absolutely impossible to carry out any reforms there. Yet the Sultan was blamed for not performing this impossibility. The Memorandum then went on to insult, open, unveiled insult which stated that the Christian Powers of Europe could not put any trust in the pledges and promises of the Sultan. And since this was so, the government of all the Christians in Turkey was to be handed over to a Committee of the European Powers. The concluding paragraph of this remarkable document is a

* Lest it should seem that I am unjust to the character of Bismarck I may be allowed to quote what one of his greatest English admirers says of him:—

"His savagery of tone seems rather that of a wild beast than of a man."—*Pearson's Essays*, p. 165.

And Busch, the Boswell of the Great Chancellor, says:—

"I heard the chief (Bismarck) say to-day, 'The idea of letting these fellows off! There is criminal negligence in not taking them out at once and shooting them.' Again, '*Burn down their villages and hang all the male inhabitants.*' And, 'why take prisoners? They ought to have shot them down by files.' And yet the German Press cried out against our concentration camps in the South African War!

very masterpiece in the complicated phraseology of diplomacy. It is worth giving a full translation of it into English. "If the armistice (a proposed one of two months between the Sultan and his rebellious subjects) should expire without the objects of the Powers being attained, the three Imperial Courts are of opinion that it will become necessary to reinforce diplomatic action by the sanction of an understanding with a view to those effective measures which would appear to be demanded, in the interests of the general peace, to arrest the mischief, and to prevent its further development." This is a good specimen of the language of diplomacy, and it reminds me of an American account of how a late English statesman of great eloquence would have said that two and two make four. "If by that peculiar arithmetical rule which we have reason to believe was known even in the Homeric age and which is now commonly called addition, we desired to arrive at the sum of two integers added to two integers, we should find—and I assert this boldly, sir, and without any fear of successful contradiction—we, I repeat, should find by the particular arithmetical formula to which I have already referred—and, sir, I hold myself fully responsible for the assertion I am about to make, as it is indeed only in holding with the eternal fitness of things—that the sum of the two given integers added to the other two integers would eventually prove to be four!"

With regard to their not being able to trust the pledges and promises of Turkey, it is distinctly refreshing to find representatives of Austria and Russia waxing indignant over, or even referring to, violated pledges and broken promises. Ever since the treaty of Kutchuk Kainardji, by which Russia solemnly promised not to interfere with the Turkish tribes round the Black Sea shore (a promise which she wilfully broke six years afterwards), ever since that time not only can it be said that Russia did not keep her word, but she never lost an opportunity of breaking it. The wilful and brazen violation of the treaty of Paris in 1871, the solemn pledge of Gortschakoff himself that Russia had no intention of taking the Merv Oasis, the crushing of the Central Asian Khanates, contrary to stipulation, these and many other well-known cases of Russian perfidy should have made her keep silent, in this respect at least. As for Austria and broken pledges, it will be only necessary to refer to the capitulation of Dresden, a full and true account of which is to be found in the memoirs of Marshal St. Cyr.

When the three ministers had drawn up this celebrated Memorandum and shaken hands with themselves, they sent it round to the other European Powers for approval. Italy signed it without hesitation or scruple; she was a young Power who wished to be on the strong side. France signed it, as she could not afford to refuse. But England, to her everlasting honour, flatly refused to join the band of bullies. This was something for which the other great Powers were not prepared. That they were surprised and angry goes without saying. But they still endeavoured to carry out their original intention of weakening and humiliating Turkey; so they called

together a Conference at Constantinople. This came to nothing; so another Conference was held in London. At this latter meeting Turkey was not represented; and a new proposal was put forward by Russia, namely, that Turkey was to disarm, after which Russia promised to disarm also. All this time *Russia was mobilising her army* on the Roumanian frontier; and when Turkey refused to agree to the provisos of the London Conference, the Czar Alexander declared war, on the 24th of April 1877.

III.

Never since the days of Peter the Great had Russia a more favourable opportunity of successfully carrying out her ambitious political aims in the south-east of Europe. Owing to the Bulgarian atrocities, public opinion was entirely against the Turk; so much so indeed that a coalition of any Western Powers in favour of Turkey and against Russia could not possibly be thought of. The tragedy of 1854 could not be staged again. To all appearance Russia had now a free hand; she was in a position to attempt more and do more than ever she did before; but she must take care to do it quickly, to make the very best use of her opportunity; which could have been effected only by dashing into the Peninsula, overwhelming all opposition and knocking at the gates of the Turkish capital before the rest of Europe had time to cool down from its fit of indignation and wrath. The already mobilised army, to the very last man and horse, should have been thrown across the Pruth and Danube before Turkey had time to breathe, and especially before reaction set in to change the public opinion of Europe. Now, if ever, was the time for swift and energetic action; especially as the Turkish army was in fragments part having its hands full on the Servian frontier, part in Bosnia and Herzegovina, and Suleiman's veterans knocking their heads against the rocks of Montenegro. That this dash could have been made by the Russian army is fully proved by Gurkko's advance across the Balkans in the beginning of the war.

But Russia, missing this grand opportunity, acted exactly as she should not have done; she undertook the war with forces altogether insufficient for the task that was before them; by shocking bad management and by the wilful neglect of the most elementary laws of strategy she invited and brought down on her devoted army disaster after disaster; and only appeared before the Turkish capital when her opportunity was lost and gone for ever. And when at last she threw into the face of Europe the Treaty of San Stefano, it was looked upon as nothing more nor less than a declaration of war against the other Great Powers. She carried out war in the style of diplomacy, but her diplomacy was carried out after the manner of war.

On the 10th of November 1876, the Czar Alexander gave the world to understand, as plainly as words could express it, that he was going to put a stop to the troubles in the Balkan Peninsula by force of arms. On the very next day the mobilisation orders were

sent out. But, to the astonishment of the whole political and military world, it was found that the task of conquering the Ottoman Empire was to be carried out by *four** Army Corps† only, about a sixth part of the forces available! Thirty Infantry Divisions, who could have taken the field in three weeks, were not even warned to hold themselves in readiness for active service.

Yet, notwithstanding this lamentable want of judgment on the part of the Russian military authorities, perhaps the four Army Corps would have been sufficient to make a dash for the Turkish capital, provided only they acted with promptitude and celerity, but they did not.

For six long months the four mobilised corps stood idly, kicking their heels, east of the Pruth. Every day of all that time strengthened Turkey, while it weakened Russia and the Russian cause. As far as a winter campaign in the Balkans was concerned, Russia had no need to be afraid; indeed, here she had the advantage over Turkey. Crossing the Danube on the ice of January offered less difficulty than in the floods of June: the campaign if begun in December would in all probability have been ended by the time the war was actually declared. This delay on the part of Russia made a very bad impression on the rest of Europe. They asked what could be the meaning of it; and they could only solve the problem by supposing that the mobilisation was only a piece of bluff on the part of Russia, as perhaps indeed it was; something after the fashion of a bully who takes off his coat to thrash a smaller man, and then thinks better of it. Europeans do not like this; and from the beginning of the campaign Russia had lost the sympathy of Europe.

Yet notwithstanding the chances that Russia had lost, it was the general opinion that the campaign would be a very short one, and that the fortune of war would be altogether against the Turks. But here public opinion was wrong. And the course of this war proves, more than does that of any other war of modern times, that in a given theatre of war combinations of circumstances arise, producing events the importance of which it is impossible to estimate or calculate beforehand. There are certain theatres of war in which a commander of troops can foretell, with almost mathematical accuracy, where a decisive battle is likely to take place. Shere Singh fought Lord Gough on the battlefield of Chilianwala, where Alexander the Great fought the Indian kings twenty-one centuries before. Napoleon fought the Allies, in 1813, on the plains of Leipzig, on the ground where the Swedish King fought Marshal Tilly in 1631. In the Russo-Turkish War the Russians expected to have to fight and

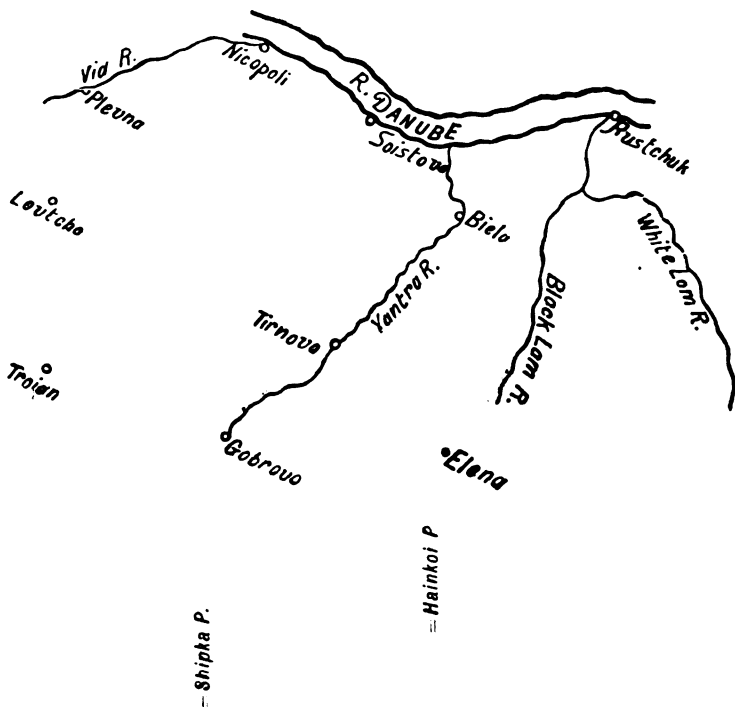
* Greene is not quite correct when he says that *six* Corps were mobilised for the invasion of Turkey in November.

† At this time a Russian Army Corps consisted of about 25,000 infantry, 3,000 cavalry, and 108 guns. Each Corps consisted of two Infantry Divisions. To each Corps a Cavalry Division was attached. This consisted of a regiment of Dragoons, one of Lancers, one of Hussars, and one of Cossacks. The regiment of Cossacks consisted of six *sotnias*, a *sotnia* being about one hundred men. The Horse Artillery batteries had six guns each, the Mountain batteries seven, and the Field eight.

IV.

lose heavily in crossing the Danube and the Balkans; and then to fight the decisive battle in the valley of the Maritza, somewhere in the vicinity of Adrianople. But they never expected that the centre of gravity of the campaign would be in a wretched, muddy, till then insignificant, village in the valley of the River Vid.

This campaign is rich in historical events for the military student. The successful crossing of one of the greatest rivers in the world and of a mountain-barrier, in the face of the enemy. A strong, huge entrenched camp springing out of the ground, as it were, on the right flank of the attacking army—the absolute paralysis of the offensive for the time being—the awful tension of the situation while fresh forces were being brought up to restore the equilibrium—the resumption of the offensive and the consequent terrible slaughter—the investment, the starvation, the surrender, and the winter campaign in the mountains.



All the most important fighting in this war took place in a comparatively small area, roughly a square, each side of which is about sixty-three miles. We may mark the four corners of this square by Rustchuk, Elena, Troian and Nicopoli. In the north, the Danube runs between Nicopoli and Rustchuk. Its average breadth here is about three-quarters of a mile, and its average depth about forty feet. But in flood time it is some five miles wide in places,

and its ordinary velocity, two and a half miles an hour, is greatly increased. Its northern banks are flat and marshy, its southern banks are rocky and steep. On the east side, the Lom falls into the Danube near Rustchuk; and the Yantra, after passing by the towns of Tirnovo and Biela, falls into the Danube a little to the east of Svistova. The river Vid runs outside the square, on the west; and the Balkans along the south side, with the Shipka Pass about the middle of the side, and the Hainkoi Pass to the south of Elena.

In 1877, the infantry tactics of the Russian army were a long way behind the times. And, to make matters worse, the rifle was being changed. The Guard Regiments, the Grenadiers, the Rifles, and nine divisions of the line were armed with the Berdan rifle; the rest had the Krenk rifle. The Berdan was sighted up to 1,500 yards, the Krenk only up to 600. The infantry advanced to the attack in column of companies; they fired without aiming; and their whole object was to close with the bayonet wherever they got the chance. Neither officers nor men grasped the possibilities of the breech-loader. At the beginning of the campaign they did not think much of entrenching tools, and they had only fifty spades and seventy-five picks to a battalion. But before the end of the war they were taught by bitter experience and heavy losses to know the value of the spade and pick. They had a peculiar and rather confusing arrangement in the Cavalry. The front rank carried sword and lance, while the rear rank had a sword and Berdan carbine. This was the case with the Lancers and Hussars; the Dragoons had the Krenk rifle and a heavy sword, and were trained like mounted infantry. The Cossacks were of little or no account; under young Skobelev they did some good; but it may be fairly said that the Cossack Legend was exploded in this war. The Cossack is a great success when fighting against women and children and unarmed citizens; but as a soldier he is beneath contempt, despised even by the ordinary infantry soldier of the line.

The Russian soldier is the very model of blind obedience. He is altogether lacking in initiative, and can only do what he is told to do. When he is marching up to a position which is to be assaulted his only idea seems to be not to get out of step. He is stolid, stupid, much given to strong drink, but wonderfully patient and full of the most sincere devotion to the Great Czar.

The Turkish forces were divided into seven Army Corps, five in Asia and two in Europe. They were in three classes; the Nizam, or regulars; the Redif, corresponding to the German *Landwehr*; the Mustafiz, nearly corresponding to the *Landsturm*. Every infantry soldier served four years in the Nizam, and sometimes went into what was called the Ithiat, to complete six years' service. He then had to serve eight years in the Redif, when he was transferred to the Mustafiz in which he was supposed to serve for six years, but practically he could be called out in any time of extreme national danger as long as he could stand on his legs and hold a rifle. Service in the

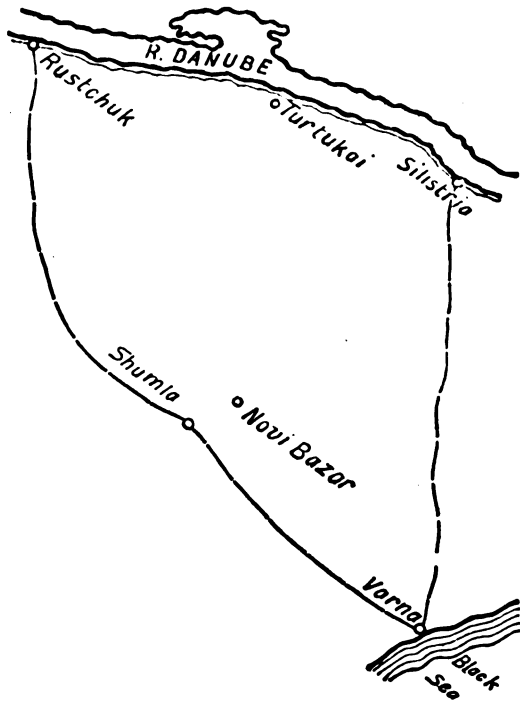
cavalry and artillery was for five years with the colours ; after which the men passed into the Redif and Mustafiz, like the infantry. The Turkish army in 1877 was well equipped and clothed ; fully provided with entrenching tools, and with a very effective organisation for ammunition supply. The greater part of the infantry were armed with the Peabody-Martini rifle, made in America, sighted up to 1,800 yards. This was by far a better weapon than the Berdan. The cavalry was the weak point in the Turkish army. They were badly mounted and badly trained. Each regiment consisted of six squadrons, nominally 150 men to each squadron. The Dragoons were armed with repeating rifles and revolvers ; the light cavalry with lances, the flank squadrons in each regiment being armed like the Dragoons. The artillery had breech-loading Krupp guns ; but the batteries were badly horsed and the gunners did not know their work. The junior officers in the army were nearly all "rankers," and many of the senior officers were, or had been, court favourites. Jealousy, which prevented all idea of mutual support, and intrigue, which destroyed self-confidence and generated mutual mistrust, were the great faults of the Turkish commanders and the main causes of the Turkish defeat. With regard to the private soldier, it may be laid down, without fear of contradiction, that he is second to none ; and under good leadership makes the best fighting material in the world.

At the beginning of the war the Turkish army was distributed as follows :—

Along the frontiers of Servia, Bosnia, Herzegovina, and Montenegro, 85,000 men ; in and about Widin, 60,000 ; in the "Quadrilateral" of Rustchuk, Silistria, Varna and Shumla, 50,000 ; along the southern bank of the Danube between Widin and Rustchuk, 15,000 ; and at the principal military centres south of the Balkans, 40,000 ; making in all a combined force of 250,000 men. And at this time the field army of Russia, formed for the invasion of Turkey, amounted to about 200,000 men.

The Quadrilateral.—The fortified towns forming the celebrated Quadrilateral in the north-east of Turkey were Rustchuk, Silistria, Varna and Shumla. Their strength consisted in the facts that (a) Rustchuk and Silistria commanded the passage of the Danube ; (b) Varna could never be starved into surrender so long as Turkey kept command of the sea ; (c) Shumla commanded the passes of the Eastern Balkans ; (d) they were connected by good roads, and a railway from the river to the sea ; (e) they barred a direct advance of Russia over the Lower Danube, and lay on the left flank of any movement west of Rustchuk.

Any good map of the south-west of Russia, or of the eastern frontier of Roumania, will show a railway going up from Kishinief towards the north-west, crossing the Pruth at Ungheni, then west to Jassy, south-by-east to Galatz, and in a round about way, finally getting to Bukarest, the capital of Roumania. After leaving Ungheni it crosses the Bachlui stream twice and the Yijia once. In



the year 1877 this was the only railway* which could be of any use to the Russian army invading Turkey. It had only a single pair of rails, and its gauge was different from that of the Russian railways. It can be easily imagined what delays and difficulties and waste of valuable time this caused to the invading army. After leaving Galatz the railway crosses over the River Sereth by a long bridge, which could have been very easily destroyed by the Turks at the beginning of the war, as the Badeniers destroyed the bridge of Kehl in 1870. It then goes through Braila, and south-west to Ploiesti, north of Bukarest.

Bukarest is the most important strategical point† between the Danube and the Carpathians. It formed also in this war a good example of what is called a "Secondary Base" in Strategy.‡

By the twistings and turnings of the single line of railway, the

* At the beginning of the war, the railway shown by Greene, from Bendery to Galatz in his map (*Campaign in Bulgaria*) was not in existence.

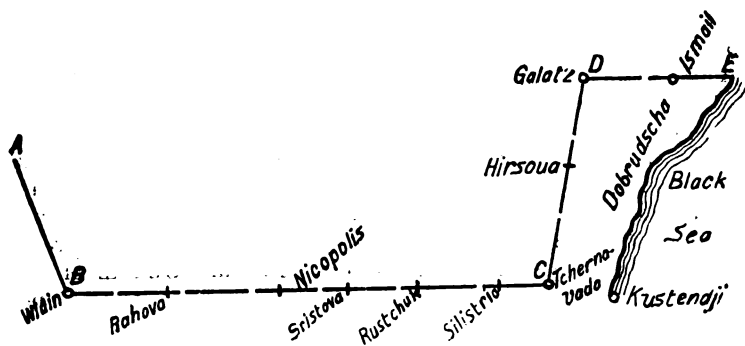
† "A point is said to be strategical when the possession of it secures important advantages for the intended operations."—*Archduke Charles*. This is the most complete definition of a "Strategical point."

‡ "The Secondary Base should be established where it can be best sustained by the resources of the Ultimate Base (in this case, Russia), while at the same time it ensures a safe retreat to the forces which it supplies."—*Jomini*.

distance between Kishinief and Bukarest was made three times longer than it really is. And this fact alone had the greatest influence on the course of events at the beginning of the war; but it was a fact of which the Turks took no advantage. On the other hand, the Russian Chief Staff did not seem to appreciate the use of railways in war. The lessons of 1866 and 1870 were quite thrown away on them. Time after time their only railway got blocked; bridges broke down; and the daily number of trains fell far short of the most moderate calculations. In the six months which elapsed between the mobilisation and the crossing of the Roumanian frontier, a military railway could have been easily laid down between Kishinief and Galatz; Roumania would not have objected, even if she could; and Russian railway enterprise in Siberia and Central Asia shows that this was quite feasible. But with a negligence, certainly culpable, and almost suicidal, the Russian Chief Staff never moved a finger to improve the means of communication with their strategic front.

In the end of April the Russian army of invasion stretched on a line from north-west to south-east, facing south-west; the extreme right being about Ungheni. Then they moved, in three columns, into Roumania. The right column swung round, first to the west and then south, through Jassy and Bakau to Fokchany, a town on the Roumanian railway about fifty miles north-west of Galatz. The central column moved south-west and south, and got on to the left of the right column, south of Fokchany. The left column crossed the Pruth by the bridge at Leova (north of Foltzi) and moved south, for Galatz and Braila. The movement was like that of a gate swinging on its hinges, the hinges being at the junction of the Sereth and Danube, and the Barboschi bridge. Here was the hardest work to be done, and it was done well. A special column was formed, consisting of three regiments of Cossacks, two battalions of infantry, and four batteries. The infantry marched fifty miles in thirty hours and the column had secured the Barboschi bridge by midday on the 25th.

While this was going on the inactivity, or perhaps indolence, of the Turks was wholly unaccountable. They knew that the Russians were coming down by the way of Galatz. Turkish ships of war were in the Matchin channel of the Danube, within seven miles of the bridge. All the Roumanian troops had withdrawn from that part of the country, and had concentrated west of the Aluta. For the defence of this important point there was not one single man left. And so the bridge fell into the hands of the Russians without the loss of a man. Certainly the Turks made a weak attempt to approach the bridge when the advanced guard of the Russian column had taken possession of it; but the foremost Turkish man-of-war fell back before the fire of the Cossack carbines! Having thus made his left flank secure, the Russian Commander-in-Chief, the Grand Duke Nicholas, proceeded to carry out the first great move in his plan of campaign, the crossing of the Danube.



In order to understand and follow his plan, a knowledge of the geography of this river is necessary. The accompanying rough sketch may be of use:—

Taking a line of 35 miles as our unit, the distance between Tchernavoda and the Black Sea coast, we start from the Servian frontier at A, and go down south-east, two units or 70 miles, to Widin. Then move east for a little over seven units, B to C, 250 miles, to the bend at Tchernavoda. Then three units north, to Galatz; and two more, D to E, to the mouth of the Danube below Ismail. The towns marked on the lines are the trade-routes across the river.

It is evident that if the invasion had been planned to take place through the Dobrudscha, crossing the Danube by Ismail or Galatz, the invading army would have been exposed to the great danger of a flank attack by sea combined with a frontal attack by the Army of the Quadrilateral.* So for these reasons alone an advance through the Dobrudscha was out of the question. Then the problem was to select the best place for crossing between Widin and Rustchuk. To cross anywhere near Widin would be dangerous, as there was a strong force in and about that fortress, under the command of the most capable of all the Turkish chiefs, Osman Pasha. Besides, such a move would have been inconvenient, as it was not the shortest road to the principal strategic objective Constantinople. For it must be remembered that the Grand Duke at this time did not make his first strategic objective the wiping out of the enemy's army in the field, as Von Moltke did in 1870; he was dreaming only of a military promenade to Constantinople as the French talked of a similar dash to Berlin. But a crossing near Nicopolis would lead directly to the principal passes across the Balkans, into the Maritza valley and straight on to the goal. So it

* It is worth while calling attention to the fact that in 1877 Turkey had "Command of the Sea" and a far better rifle than the Russians had. In 1870, France held command of the sea, and had the better rifle. But notwithstanding these advantages both France and Turkey got badly beaten; and they owed their defeat to the very same causes, bad management and want of unity in leadership.

In the Russo-Turkish War of 1828 the Russian army did advance through the Dobrudscha; but at that time Russia had the command of the sea, owing to the destruction of the Turkish fleet in the previous year at the battle of Navarino.

was decided that the crossing should take place at Svistova. Now a certain amount of stratagem must always enter into the operation of crossing a river in the face of an armed force. When Moreau wished to cross the Rhine, in 1800, he first of all used every means to give his opponent, Kray, the impression that he was going to cross by Strassburg. Similar artifices have been used by military leaders in all history, from Alexander the Great on the Jhelum to Kuroki on the Yalu. And the Russian Commander-in-Chief was no exception to this rule. He tried to give the Turks the impression that the crossing was to take place at Braila. And in order to make them believe this he sent the 17th Division, under General Zimmerman, across the Danube near this place, on the 22nd of June. And the crossing here was successfully carried out with a loss to the Russians of only five officers and 138 men. Five days afterwards the main body of the Russian army began the real crossing, from Simnitsa to Svistova. The 14th Division and the troops attached to it, consisting in all of about 15,000 men, crossed in boats; six detachments of 2,500 men each, under the command of General Dragomiroff. The Russian army had gained a firm footing on Turkish soil at the comparatively small loss of 31 officers and 790 men.

On the 2nd of July the pontoon bridge between Simnitsa and Svistova was complete, and by the 10th of July four Russian Army Corps had crossed to the southern side of the Danube.

And now, the programme to be carried out by the Grand Duke Nicholas seemed a very simple and easy one. On the east, that is, on the left flank of the advance, the Czarevitch, with the 12th and 13th Corps, was to keep in check the main Turkish army which stood behind the lines of the Yantra and Lom, under the command of the aged and decrepit Abdul Karim Pasha. On the west, General Krüdener was first to take Nicopolis, and then "line up" to cover the right flank of the advance. While, in front, the task of clearing the way was placed in the hands of the energetic and dashing Gourko. The Czarevitch began his work well by capturing Biela and the only stone bridge over the Yantra, on the main road from Rustchuk to Plevna. He then pushed on to the banks of the Lom and hindered for the time being any forward movement of the Turkish army, which was stretched out on a long line from Eski Dzuma up to Rustchuk.

Krüdener, with the 9th Corps, set about his task of reducing Nicopolis, which was held by a weak force of about 8,000 men. The Russian General put forth all his strength to capture the place as quickly as possible. After events proved that it would have been much better for him and for Russia if he had been content with investing the place with a small fraction of his forces, and then at once securing the strong line of the river Vid. He had under his command a certain Colonel Tutolmin, who had just been given temporary charge of a Cossack brigade. Tutolmin was a man with a steady, clear head on his shoulders. He knew the country in which he was fighting; he

knew the people and their language; and they had told him that a large body of regular Turkish troops were moving from the west, on to the Vid. He sent out patrols, who confirmed this report; and, having "an eye for country," he made up his mind that the best thing to be done would be to seize the position of Plevna. So he asked Krüdener for permission to do this, and begged for the assistance of only one battalion of infantry. Now the most heinous and unpardonable crime in the Russian army which a Colonel can commit is to know more than his General; a peculiarity, perhaps, not confined to the Russian army alone. Poor Tutolmin came off cheaply: he got the most unmerciful snubbing from Krüdener; but the General's refusal to listen to the Colonel's suggestion cost the Russian army about 50,000 men. On the 15th of July Krüdener captured Nicopolis, with a loss of 30 officers and 1,400 men. Considering the advantage gained, these were enormous losses; and they were due to the fact that the Russian infantry made the great mistake, which they repeated over and over again all through the campaign, of not giving the artillery sufficient time to prepare the way for their advance, and rushing blindly to the assault without having made any attempt to subdue the enemy's fire. After he had taken Nicopolis, even then Krüdener did not hasten to take up the line of the Vid; but he scattered his troops aimlessly in the corner of the lower Vid and the Danube.

The advanced guard, which was to clear the front, consisted of $10\frac{1}{2}$ battalions, $31\frac{1}{2}$ squadrons, 3 batteries of horse artillery (18 guns), and 2 batteries of mountain artillery (14 guns); about 13,000 men in all. They were placed under the command of General Gourko. His orders were to seize one or more of the Balkan passes; brush aside any small opposing bodies; bring about, if possible, a rising among the Christians south of the Balkans; and gain a footing in the valley of the Tundja. (This river runs nearly parallel to the Balkans from Kalofer to Yamboli, then turning south, joins the Maritza near Adrianople.) Gourko began his allotted task on the 4th of July; having concentrated at Kozlovetz during the day, his infantry bivouacked that night at Akcair, with the cavalry spread well out in front, at Habeli, Karaisan, and Ovtza Mogila. Here they halted next day, the cavalry getting into touch with the forces east and west of the advance. On the 6th the infantry got to Batak, while the cavalry had pushed on further to the south-west as far as the little river Rusita, a western branch of the Yantra. Gourko's next objective was the ancient and classical city of Tirnova. He got information that it was held by a strong Turkish force, and he at once made his dispositions for the attack. His Dragoon brigade was ordered to attack the city from the west; the Cossack brigade from the north and north-east; these preliminary attacks to be supported and driven home by the infantry and guns pushing down from the north-west and by the main road from the north.

It was generally expected that the Turks would make a determined effort to hold Tirnova. It was a position of great importance,

both from a strategical and political point of view. It had been the capital of the great old Bulgarian Empire. In addition to its great natural strength it was defended by field-works which, although they were not models of high-class engineering were yet capable of prolonged defence. If the Turks intended to make a stand anywhere north of the Balkans, here was the place and now was the time. The garrison consisted of 4 battalions of regulars, a squadron, a mountain battery, and a few hundred Bashi-Bazouks. The regular troops were under the command of Said Pasha; and the Bashi-Bazouks under a man who had formerly been a *scout* in the Frontier Force of the Indian Army and now called himself Savfet Pasha. Even among Bashi-Bazouks this fellow was notorious as a most brutal and repulsive ruffian but as a fighting man he had few equals.

When the said Pasha heard that the Russians had crossed the Danube he guessed that they would make a dash for Tirnova, and he determined to do all in his power to hold it. So he sent messenger after messenger to the Commander-in-Chief, Abdul Karim Pasha, begging and praying for reinforcements. From Osman Bazar, which was only forty miles away, 20,000 troops could have been easily sent in three days. But Abdul Karim never sent a man or a gun to save Tirnova. And the Turks threw away another great opportunity.

In the middle of the warm night of the 6th of July, the Turks stationed on the heights round Tirnova saw the skies towards the north red with bright patches of flame. They had no doubt as to what it meant. Blazing villages—"Moskof geldi," the Russians are coming. Next morning a crowd of hunted, fainting women, children, and old men got into the town. Almost on their heels came the Russian cavalry, from the west and north. And now where was the commander of the Turkish regulars, Said Pasha, and what was he doing? He lost heart. Shortly after sunrise he had quietly slipped away with a few troops along the safe road to Osman Bazar. But the ex-sowar of the Indian Frontier Force was a man of different stuff. Fighting was to him as the very breath of his nostrils; and at the first sight of the Russian horsemen in the grey mists of the morning he and his Bashi-Bazouks fairly yelled with delight. They did not wait for the Russians, but went out to meet them as if they were old and dear friends. A few hundred of the Turkish regular infantry who had refused to run away with Said Pasha attached themselves to the force of Bashi-Bazouks, and they fought with the courage of despair. This small force drove back the Russian cavalry again and again; and they would have held their ground all day and then retreated, as they had intended to do, under the cover of night, were it not that the Russians managed to bring a battery on a hill to the north and hammered them frightfully on the left flank. About the same time a fresh Russian column was seen making an attempt to get round by their right, and so cut them off their line of retreat, the road to Osman Bazar; and seeing this, they fell back slowly and steadily, fighting every inch of the way. The Cossacks were sent to follow up the pursuit; but when these had got as far as the little

village of Merdan, about five miles east of Tirnova, the grim old sowar turned on them scattering them like so many sheep.* After this the retreat was not molested any more.

Gourko's force got into Tirnova on the 8th; and he at once sent out reconnoitring parties to get all the information he could about the Balkan passes on the south. Here there are three passes: the Shipka on the west, the Travna in the middle, and the Hainkoi on the east, almost due south of Tirnova. The road from Tirnova to the Shipka was the best; but it was too long; and, besides, Gourko got information that this pass was held by eight battalions of infantry and some mountain batteries. The Travna Pass was fit only for goats and brigands and smugglers; but the Hainkoi Pass could, with some trouble, be made fit for the passage of an army. So Gourko decided on the Hainkoi Pass as the best place to cross. He sent small bodies of men to the other two passes, and even to the Elena Pass on the east, in order to draw away the attention of the Turks from his real point of passage. He ordered that only the battery ammunition wagons and pack animals should be taken with the force; all the other wagons and animals were to be left behind in Tirnova; mounted sappers were to clear the way, but were not to use blasting-powder nor dynamite, for fear the report of the explosions might give the alarm to the Turks; five days' rations were to be carried for the men, and three days' food for the horses; and every man was to carry as much ammunition as he could stow away. On the morning of the 12th of July the force started out from Tirnova, and reached Kolibi that night. Next morning, at six o'clock, Gourko moved on again; and by sunset he had crossed the pass, forty miles from Tirnova and near 4,000 feet high. So far he had done well, and nobody could have done better; but, as it turned out afterwards, he made a mistake in sending Prince Mirsky along the north of the Balkans, with a mere handful of men (2,500) to seize the Shipka Pass. Mirsky was a prince, but he was no soldier: he was afterwards surprised and beaten by the Turks at Elena, and only saved from total annihilation at Senova by the bravery and self-sacrifice of the younger Skobelev.

On the morning of the 14th of July, 300 Turkish infantry soldiers lying in the valley below the Hainkoi Pass saw the sheen of bright lances up the mountain side. The outposts fired at something grey they saw moving through the bushes, and then the Cossacks were down on them before they had time to fall in. They made only a poor fight of it, and then they retreated eastward along the road to Slivno, a garrison town thirty miles away. On the

* I have a particular reason for giving a careful description of the little battle of Tirnova, and it is this. In the end of the year 1878, a history of the war was published in St. Petersburg. It was, of course, written in Russian, and entitled "Godi Voyennui" (The War Year). It describes the action of Tirnova as a most terrific battle, which reflected the greatest credit on the Russians and corresponding disgrace on the Turks. My account of the battle may be taken as absolutely correct; and I am supported in my statements by Dr. Kanitz, in his *Donau-Bulgarien und der Balkan*, published in Leipzig by Gebhardt and Wilsch, 1882.

15th Gourko sent out cavalry patrols to Tvardica, about six miles out on the Slivno road; to Jeni Zagra, on the railway, about 15 miles to the south; to Eski Zagra about 18 miles to the south-west; and to Kezanlik, about 20 miles along the road which runs parallel to the Balkans, branching at this place to the Shipka Pass on the right, and to Philippopolis on the left. The cavalry which were sent to Tvardica did their work well. They met a body of Turks at this place, fought them on foot, and put them to flight in less than an hour. The Jeni Zagra patrol was not so fortunate. They got as far as the railway and cut the telegraph line; but then, pushing on further, they found themselves face to face with four battalions of infantry and a battery, so they retired. At daybreak on the 16th, Gourko advanced towards Kezanlik. It was a pretty sight that morning to see the long column of all the different arms moving along through the green fields and the rose-gardens, with the violet coloured hills in the near distance and the blue Balkans rising far and high. There was what looked to be a curious bundle tied on to a gun. It was MacGahan, the war correspondent, who had broken his ankle, and could not walk. On a mound outside the little village of Maglish, Gourko could be plainly seen giving his orders, and now and then sweeping the horizon with his field glasses. Standing close by him was a most remarkable-looking man who stood head and shoulders above everybody all round. Some time afterwards I asked a Russian officer who this tall man was. "Oh," said he, "that was an English officer of your Imperial Guards; his name was Burnaby."

There were small fights the whole way from Maglish to Kezanlik; but there was a big fight at Kezanlik. And if there is any man who entertains any doubt about the efficacy of dismounted cavalry as good fighting men, he should have seen this fight or one like it. The town was taken by the cavalry on the afternoon of the 17th, and they also took 400 prisoners and 3 guns. It is only five miles from Kezanlik to the village of Shipka, and this place was captured on the same evening.

Now it had been arranged by Gourko that on this day, the 17th, a simultaneous attack should be made on the Shipka Pass, by his own force from the south and by Prince Mirsky's from the north. But owing to the unexpected opposition which Gourko had encountered on his way from Hainkoi, we see it was impossible for him to carry out his share of the programme on that date. He should have left a margin for the unknown. It was as impossible to foretell with mathematical accuracy when and where the Turks would give battle as to foretell when and where a stray dog was going to bite. On the night of the 16th, Gourko had sent a Bulgarian across the mountains to tell Prince Mirsky to postpone the attack for a day. But the Prince would hear of no postponement; he would capture the Pass single-handed; and he was driven back with a loss of six officers and 300 men in killed and wounded. This success on the north side seemed to encourage the Turks on the south of the Pass; for when Gourko attacked on the morning of the 18th, he was

defeated with a loss of over 300 men. But he renewed his attack next morning; and the Turks, taking rather a mean advantage of the time too generously granted to them by Gourko to discuss the terms of capitulation, retreated across the mountains towards Trojan.

Gourko had now completed the most important part of his task. He had captured the passes of the Balkans which lay on the direct southward advance of the invading army. The work done by him from the time he crossed the Danube until he captured the Shipka Pass will always remain a striking example of what can be done by mobile troops when well handled. It will not be out of place to quote here a few remarks of an able and experienced soldier, Major Maurice, in speaking of this. He says:—

“Gourko’s failure to co-operate with Mirsky is another example added to the many in military history, of the futility of framing for days ahead plans which are dependent for their execution on what the enemy may do, and of the difficulty of ensuring united action between two forces which are not in direct communication. The cases in which our columns in South Africa failed to co-operate at the critical moment are fresh in the memories of most of us. Napoleon’s dictum that *a double line of operations is unsound* is still true. Telegraphy has, however, made it possible to keep forces which are separated still under the control of one man; and they are then working on a single line of operations in the sense in which Napoleon understood the phrase. But unless there is some sure means of exchanging information, and receiving and issuing orders, between forces which are working apart, failure to co-operate will still be the rule and not the exception.”

V.

During the earlier part of Gourko’s operations below the Balkans the Turkish forces in these parts were commanded by Raouf Pasha. This officer afterwards succeeded Suleiman Pasha in command of the army south of the Shipka Pass, and he was made Commander-in-Chief of the Turkish armies early in 1878. He was a man of some ability; his manner was reserved and calm; as a director of military operations he was painstaking and cautious. In appearance he was like a Russian Jew, the same hooked nose and heavy under lip, so that his expression was not pleasing; yet he was kindly and courteous, and he spoke French well. He got the credit of being the only Turkish commander who took any care of his men; he shared their toils and hardships, and could live on parched grain and water, wear ragged clothes, or sleep in the mud, with the best of them. Of the 16,000 men he had, few, if any, had ever “smelt powder” before; many of them were only raw recruits, and a good number were quite old men. It was some of this force which Gourko had to fight against when he first crossed the Balkans. And when, having placed the Shipka Pass in a state of defence, he faced eastwards to carry out effectively the occupation of the Tundja valley, he thought that he would only

have to deal with such troops again. But he was grievously disappointed ; and not only disappointed but astonished. He was beaten, and hunted across the Balkans with a loss of over 1,000 officers and men. The principal cause of this sudden reverse of fortune was as follows.

At the Russian Headquarters it was fully believed that when the report of the uninterrupted advance of their army and the successful capture of the Balkan Passes reached Constantinople, the Turkish Government would be so terror-stricken that the Sultan would be only too anxious to come to terms and put an end to the war. Therefore they did not do as they should have done, and that was, to send at all risks, every man and horse and gun they could scrape together to hold what had been so well won by Gourko. Instead of doing this they were knocking their heads against Osman Pasha's field works, and soaking the hills round Plevna with their best blood.

And instead of the Sultan trembling in his patent-leather shoes and coming to fall at the feet of the Czar and beg for peace, the Commander of the Faithful rose up in his might, and for once proved himself worthy of the sword of Othman and the throne of Mahmoud and Solyman the Magnificent. He ordered Suleiman Pasha to take his army away from Montenegro and transfer it to the theatre of operations south of the Balkans and Suleiman was not slow to obey. He began to embark, at Antivari, on the 16th of July ; and, by the 26th, he had conveyed his twenty-nine battalions, three batteries, and five squadrons (30,000 men in all), a distance of 1,200 miles by sea and railway, and had placed them on the very battlefield, behind the line of railway from Hermanli to Karabunar station. This, as Major Maurice remarks, "is one of the most striking examples in military history of the value of sea power to operations on land."

Gourko had received orders to advance from Kezanlik on Jeni Zagra, to seize the railway at this place, and if he could not hold it to destroy it. His forces were at this time divided into three columns, and these he ordered to converge on the point of attack. His left column, from Hainkoi, had the shortest distance to cover : it was composed of five battalions, two batteries, and about 300 Cossacks. His right column, from Eski Zagra, had a fairly good road to march by ; and it consisted of the Bulgarian Legion of four battalions, three regiments of cavalry, and two batteries. The centre column, from Kezanlik, consisted of the Rifle Brigade, a regiment of Cossacks,* and four batteries.

Gourko himself commanded the centre column. On the 29th he started from Kezanlik, and he joined his left column, at Kavlikoi, on the 30th, after a very difficult march of 40 miles. The Turks were entrenched in front of the railway station ; and it was some of Suleiman's hard-bitten veterans who were there, not the raw youngsters and old men of Raouf's force. The men of the Rifle Brigade had seen no enemy since the day they had got into the

* Six sotnias, or about 600 men.

torsaken Shipka entrenchments, where they found their wounded, and even the bearer of the flag of truce beheaded and most brutally mutilated. They thirsted for the blood of the Turk, and they longed to look into the white of his eyes. In their eagerness to close with him they did very little shooting, but they dashed over the earth-works and went to work with the bayonet. Quarter was neither asked for nor given on either side. It was no longer men who were fighting, but raging wild beasts; and the wounded bit and tore each other like dogs. Once or twice it looked as if the Turks were going to hold the entrenchments, when they came on in a surging wave crested with steel and hurled the Russians down the hill side; but the rifles were not to be kept back; and in the early part of the afternoon they had swept everything before them, and the battle of Jeni Zagra was won. Then the railway station was blown up, and all the Turkish ammunition and stores destroyed.

In the meantime Suleiman Pasha had formed a plan to surround and wipe out the right column which was coming up from Eski Zagra. With this object he directed Raouf Pasha to move down by the main road from the north-west, with 12 battalions, 4 batteries, and 700 cavalry; while he himself moved with 31 battalions, 4 batteries, and 700 cavalry, from the south-west by way of Arabzikoi. Raouf met the advanced guard of the right column and drove it back on the main body at Dzuranlı.

Late on the night of the 30th, Gourko had thrown himself down on a heap of straw in one of the few huts which had been left standing by Raouf's troops in the village of Karabunar, to snatch a few hours of well-earned sleep. But he was suddenly roused by the clatter of horses' hoofs and shouts of "The General! The General! Where's General Gourko?" He dashed out of the hut, and found that the horseman was one of the Leuchtenburg Dragoons who had ridden from Eski Zagra and made his way through the Turkish lines. "Your Excellency," said the Dragoon, "I have not had time to wait for a written message; but I have been told to inform Your Excellency that a huge Turkish army from the south has surrounded the Bulgarian battalions at Eski Zagra, and unless you come to their help without delay not a man of them will be left alive." Upon this the Russian General made all preparations to cut a way through Raouf's army, which lay between him and Eski Zagra, and he began the fight by daybreak on the 31st. But the numerical odds were entirely against him. Raouf tried to turn his right and cut off his retreat; and the Pasha would have succeeded were it not that Leuchtenburg's Dragoons came up in the very nick of time, having gallantly cut their way from Eski Zagra, and hurled themselves with such terrific force on Raouf's left that the Turks fell back, and the road to Eski Zagra was clear. Here was a case where a gallant regiment of Cavalry, by a timely charge, saved an army from annihilation.

Gourko could do nothing more; numbers and the fortune of war were against him. He ordered the Bulgarians to fall back from

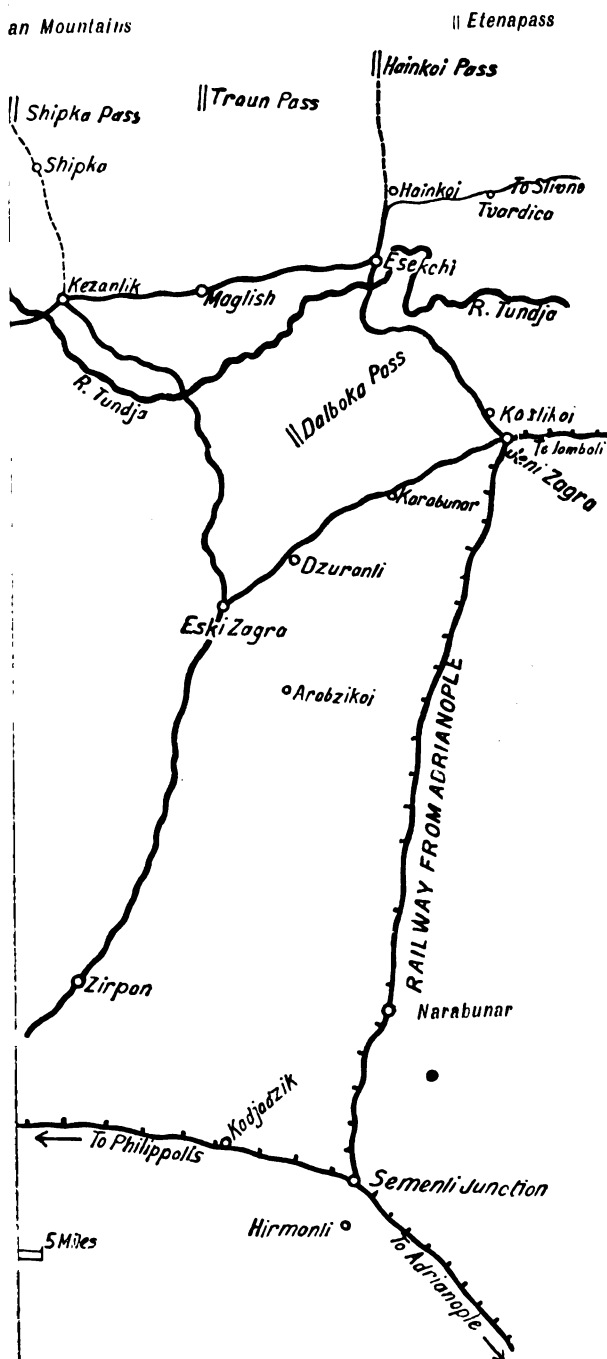
Eski Zagra to Kezanlik ; and he brought his own forces through the Dalboka Pass next day. On the 3rd of August he reached Hainkoi ; on the 5th he received orders to go back across the Balkans to Tirnova. The latter part of his operations had been a failure because he split up his forces. He should have learnt from what happened on the 17th of July at the Shipka Pass that there are few things in military operations more difficult than to combine the movement of columns which are not in communication.

Different opinions have been given on the use and effect of Gourko's expedition ; but the criticism of the American historian, Greene, is the fairest of all. He says :—

“Gourko's expedition was more than a mere cavalry raid : it was an admirably conducted movement of an advanced guard composed of all arms. With 8,000 infantry, 4,000 cavalry, and 32 guns, it had in less than a month gained possession of one of the principal passes of the Balkans, from which the Russians, though terribly attacked, never let go their hold, and which they finally used in January for the passage of a large portion of their army ; it had caused a panic throughout the whole of Turkey between the Balkans and Constantinople ; and its scouting parties had penetrated to within 70 miles of Adrianople, the second city of the empire, and had destroyed the railroad and telegraph on the two principal lines ; finally, it had gathered accurate information concerning the strength and positions of the large Turkish force advancing towards the Balkans.”

(In my next article I shall give an account of the attacks on the Shipka Pass, the battles of Lovtcha and Gorni Dubnik, and the military operations in the Etropol Balkans.)

To show Operations of Gourko south of the Balkans.



THE CAUSE AND TREATMENT OF THE SKIN-DISEASE COMMON AMONG HORSES, AND SOMETIMES REFERRED TO AS "PRICKLY HEAT."

BY COLONEL E. T. PAUL, COMMANDANT, 6TH KING EDWARD'S OWN
CAVALRY, AND CAPTAIN V. B. NESFIELD, I.M.S., F.R.C.S.,
6TH K. E. O. CAVALRY.

Description of the Disease.

The skin-disease under consideration is that scaly, irritable one that attacks Waler horses in India as soon as the hot weather commences, and that continues to increase in severity until the rains, when it remains, more or less, stationary, and then passes off with the approach of the cold season, but only to reappear as soon as the following hot weather comes on.

It is characterised by the appearance on the bodies of affected horses of scaly, bald, and extremely irritating patches, which, on careful examination, will be found to have originated from small lumps in the skin, the summits of which soon lose their hair and produce slight discharge; the discharge, however readily dries and a scaly appearance results.

The disease generally appears first in one of the three following places:—

- (i) the mane and its vicinity;
- (ii) the dock;
- (iii) the barrel.

The appearance on the mane and tail is typical as they become scurfy and irritation asserts itself to such an extent that a horse will take every opportunity of rubbing its tail against a pillar, or other object, and of rubbing its neck with the toes of its hind feet, until open sores are produced. When the disease is most pronounced, the horse's body may be entirely covered with bald patches, surface abrasions, and sores. In short, there is no possibility of mistaking this disease that is usually termed "prickly heat" and described as "inflammation of the sweat glands." The symptoms can, perhaps, be best described by the expression "skin irritation," the consequences of which are, in addition to sores, loss of appetite, temper, and condition, while even death from tetanus may result by dirt being introduced into the open sores. We have never seen a mule attacked by the disease, and country-bred horses but rarely.

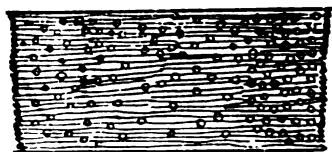
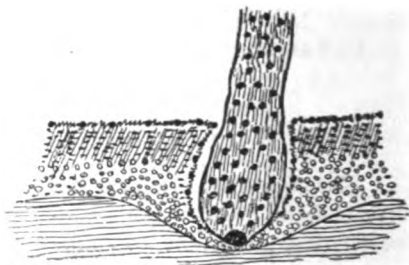
The Cause.

The cause of the disease is usually ascribed to "inflammation of the sweat glands" during the hot weather; it has also been ascribed

to heating of the blood, feeding on green grass, feeding on gram, hereditary predisposition, insufficient grooming, and dirt. All these factors, with the exception of the first, doubtless are predisposing causes, but no one of them is the actual cause.

The principal predisposing causes seem to be "hereditary susceptibility" and "insufficient grooming." The actual cause is a fungoid parasite which grows in the hair and in the hair follicles, and which spreads from there to the surface of the skin—see accompanying sketch. The parasite is somewhat similar to that which causes ring-worm, but has nothing to do with the animal parasite that causes mange.

To examine the parasite, remove one or two hairs from a diseased patch—place them on a glass slide—add a drop of liquor potassæ—heat over a flame until steam forms—lay over a cover-slip—and examine under a microscope with a $\frac{1}{6}$ th objective, and, for better definition, with a $\frac{1}{12}$ th oil immersion. It is as well to include a normal hair for comparison. The hot liquor



potassæ softens and swells the hair material, while it does not affect the parasite; to obtain good definition, squash the hair by pressing on the surface of the "cover-slip," and the flattened hair will then disclose more clearly the micro-organisms, which will be seen lying in large numbers in the interior of the hair. On examining a diseased hair, prepared as above, under the microscope, the following points can be easily noticed: long chains of round bodies, each about twice the size of a staphylococcus, are disseminated throughout the hair causing it to appear dark and striated, with layers of homogeneous yellowish hair material between the rows of dots; on looking at a healthy hair, nothing but a clear transparent homogeneous band will be seen, and consequently the diseased hair can at once be detected as being occupied by opaque lines of round dots, which are the parasites.

This parasite can also be found in the root of the hair and in the scales on the surface of the skin. Its exact nature has not yet been definitely ascertained, but from its appearance the rounded bodies seem to be spores of some fungoid plant, somewhat analogous to micro-sporon furfur, or micro-sporon endothrix.

Treatment.

This must be essentially antiseptic, though the predisposing causes must be kept in view. The local treatment consists of the

following :—clipping off the mane if affected, singeing the belly if necessary, and applying tincture of iodine to each affected spot for two consecutive days; on the third day the horse is washed all over, and all scales that may have formed on the diseased portions of the skin are removed with a brush, the finger nail, or a blunt piece of metal; about four days after this treatment, the horse is again examined with the object of applying the tincture to any patch that may have previously escaped notice, and also to any other nodules that may have increased in size owing to their having escaped attention.

The mane and tail are the most difficult to treat, as the iodine has to be rubbed in thoroughly so as to reach the scurfy skin, and one should not be content until the whole affected area has been stained yellow. In applying the iodine, no fear need be entertained that increased irritation, or blistering, will result, for, as a matter of fact, the horse enjoys the treatment, and even the most restless ones stand quiet during the process as the immediate result of the application is alleviation from the intolerable irritation, and the disappearance of continued nervous restlessness.

Flies may be kept away by burning on the weather side of the horses damp grass which will produce smoke; also by rubbing over the horses' bodies with a cloth moistened in kerosine oil.

The general treatment consists of thorough grooming; a feed of boiled barley and bran; fodder may be either green grass or hay, or both; walking exercise at least $1\frac{1}{2}$ hours daily; and on two consecutive mornings 2 ounces of sulphate of magnesia in the drinking water. In about two weeks' time the treated areas will be healed, free from scurf, and producing hair.

The reason for using tincture of iodine in place of carbolic, phenyle, or perchloride of mercury, is that these latter antiseptics are non-penetrating, and, moreover, are dissolved in water, whereas tincture of iodine, on account of the penetrating properties of iodine and of the presence of alcohol, reaches the very interior of the hairs, and of the skin scale, though they may be greasy, for grease, as is well known, prevents any watery antiseptic penetrating, but does not prevent the ingress of an alcoholic solution of an antiseptic. Indeed, it is more than probable that, owing to the constant attempts to treat this disease with carbolic with such unfavourable results, it has been pronounced non-parasitic.

It may here be remarked that "prickly heat" is not a microbic disease, but merely irritation of the sweat glands through excessive perspiration, accentuated by certain conditions of the atmosphere. But it undoubtedly has a strong connection with the disease under consideration, because moisture is just as essential to the parasite for growth as it is to grass, fungi, or other plant; consequently, the perspiration, when mixed with the skin-scurf and debris found at the roots of most hairs, forms an excellent soil for the growth of the parasite, and it will be thus seen why dirt, heat, and moisture are very powerful predisposing causes of this parasitic disease.

We are unable to say whence this parasite comes. It may be introduced from Australia, though it is to be found in neglected "ekka" ponies; country-bred and Arab horses seem to be immune from it, though they may acquire the disease by contagion.

Preventitive Measures against the Spread of the Disease.

The saddlery, stable gear, stalls, etc., of affected animals should be washed in weak phenyle; diseased horses should be segregated; thorough grooming daily is essential in order to keep the skin clean and free from scurf, and occasional washing with soap and water is desirable.

THE NATIVE CAVALRY OF INDIA, ITS SYSTEMS AND ORGANISATION.

BY LIEUT.-COLONEL J. B. EDWARDS, D.S.O., COMMANDANT, 27TH
LIGHT CAVALRY.

The two systems under which the Native Cavalry Regiments of India are serving are so absolutely dissimilar in their fundamental principles that it is hard to find a basis from which to start a comparison of them.

In the Sillahdar system the objects aimed at are self-support and freedom, as far as possible, from dependence on the various departments of the State : whereas this very dependence on Government and its departments is the foundation upon which the Non-Sillahdar system has been built up.

When the original controversy on this subject was carried on in the "Pioneer" and "Madras Mail" during 1904, I was on leave in England and did not see any of the articles till my return to India in November of that year. I went through the various articles carefully once or twice and it seemed to me that the writers on both sides argued almost entirely from the fixed basis of their own system, and, although knowing something of the other, had, no doubt, owing to want of personal experience, no real insight into the working of any but their own, and I must say that this view has been in no way modified by reading the recent articles of Major Mathewes and Captain Tennant in the "Journal of the U. S. Institution of India."

These two officers have dealt with the matter at considerable length and in much detail, and it is not my purpose beyond what is necessary to point my arguments to follow their example. My object being rather to place before your readers the conclusion I personally have arrived at on the merits and demerits of these two systems after considerable personal experience of both, having had first over 20 years' service in a Sillahdar Regiment and lastly over two years in command of a Non-Sillahdar one, letting them judge for themselves and assist in evolving some scheme which combining the good points of each could be made applicable to both, and which if adopted by Government would tend to increase the efficiency of that branch of the service to which we, Sillahdar or Non-Sillahdar, are justly proud to belong, *viz.*, the Native Cavalry of India.

The chief points urged in favour of Sillahdar as against the Non-Sillahdar system—

- (1) *Cheapness to Government*, in that Government has no large sums of money tied up in it.
- (2) The spirit of independence, self-reliance, and resource engendered amongst both officers and men.

The principal disadvantages are :—

- (1) *The Horse Question*.—Namely the difficulty Commanding Officers have, with the increased cost of remounts, of being able to mount their men efficiently and well.
- (2) *The Recruit Question*.—The difficulty experienced in some regiments in getting recruits with sufficient money to meet the demands of the “ Assami ” as now required by regiments.

The disadvantages referred to above are the points in which the Non-Sillahdar Regiments come to the front as they have no difficulty in obtaining Government remounts or in enlisting suitable recruits.

The disadvantages of this system may be taken as—

- (1) Expense to Government owing principally to the large sum of money Government has tied up in each regiment.
- (2) Dependence on the various departments of Government which cramps initiative, self-reliance and resource.
- (3) The amount of office work entailed on the Regimental Staff on account of this dependence is enormous and occupies the time of these officers who could be far better employed in the legitimate exercise of their profession than sitting on an office chair.
- (4) Owing to the veterinary system in force Regimental Officers have few opportunities of either improving themselves in practical veterinary knowledge, or practising it, and the want of this experience would be most seriously felt by them when detached with their squadrons on service.

Both these systems then have their good and their bad points, and it cannot be doubted that it would be a great thing for the Native Cavalry if one system could be adopted for all the 38 regiments, which, while retaining the independence, self-reliance and resource of the Sillahdar systems, would do away with its weaknesses and engraft in their stead the advantages of the Non-Sillahdar system.

To arrive at anything like a definite opinion on a large and important question of this nature, it is necessary to ascertain how it affects the two parties principally concerned—

- (1) The Government.
- (2) The Native Cavalry soldier.

Let us take the Government point of view first. In discussing any military matter affecting the State, it would appear that the primary place should be given to efficiency, the second to expense, on the ground that a really good article, even if it costs more at first, is the cheapest in the long run.

Horses.—As a Cavalry soldier without his horse is of little use, the question of horses naturally demands first place. The amount paid both by Government for the Non-Sillahdar horses and by Sillahdar Regiments is nowadays practically the same, since so many Sillahdar Regiments have taken to buying Australians, and

Government have adopted the Sillahdar plan of buying the horses at the port of disembarkation and sending them thence direct to regiments. The price is Rs. 400 per horse. Railway fare cannot fairly be considered in the matter as the amount depends entirely on the place where the receiving regiment happens to be quartered and so differs in every instance.

It is an acknowledged fact that each regiment, Sillahdar or Non-Sillahdar, requires yearly 10 per cent of its establishment as remounts to keep it thoroughly efficient and up to present day requirements, that is, Non-Sillahdar Regiments require 50, Sillahdar Regiments 60 remounts yearly.

The question arises, can Sillahdar Regiments afford the purchase of these 60 horses yearly out of their Chanda Fund, composed as it is of the men's horse price, monthly subscriptions and amounts realised by sale of casters? It will be seen that I am here dealing only with the legitimate sources of revenue of this fund, for a good and efficient horse sold means a decrease in the fighting efficiency of the regiment, until the remount bought in its place is ready for the ranks.

There can be only one answer to this question "Certainly not." The horse price represents the value of the original horse and so is not available yearly, the monthly subscriptions average Rs. 1,250 a month. The sale of casters is variable, but I think if an all-round average of Rs. 50 is allowed, casualties being excluded, it is rather over than under the usual amount realised, hence the account works out thus:—

				Rs.
Subscriptions	...	$1,205 \times 12$...	= 15,000
Sale of casters	...	60×50	...	= 3,000
Total				<u>18,000</u>

As against

60 Remounts @ 400	= 24,000
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To raise this Rs. 6,000, other means must be employed to supplement the Chanda Fund, or a cheaper horse must be purchased and this, in horse flesh, means either an immature animal or one of an inferior stamp.

Next comes the feed of the horses. As the Non-Sillahdar can neither make nor lose over the feeding of the horse, it is a matter of indifference to him what actual feed is ordered, as it does not affect his personal pocket in any way. On the contrary, not only every extra pound of grain given to his horse, but the mere fact of feeding the horse on any but the cheapest kind of grain, *does* make a considerable difference in the amount of balance of pay due to the Sillahdar at the end of the month, and is therefore a very personal matter with him.

I am aware that this personal interest is often used as an argument to prove that it makes the man look better after their horses. I contended so myself once, but have come to the conclusion that

the elimination of this personal element in the feeding of the horse is sound; and that the horses, as a whole, are all the better for its non-existence.

Before leaving this subject of the horses there is a side issue that might be touched upon, namely, the difference in the establishment of horses with regard to men under the two systems. The Sillahdar Regiments being mounted up to full strength whereas the Non-Sillahdars are 70 horses short, on this point I am all in favour of the Sillahdar system of one man, one horse. I admit there is a good deal in Major Mathewes' argument in favour of shortness of horses and that the more horses a man rides the better rider he becomes, but more than this is required of the cavalry soldier of to-day. Not only must he be a good rider but he must thoroughly know his horse, its peculiarities both constitutional and physical, what it can do and what it cannot do, when he must save it and when he can push it for all it is worth. This can only be acquired by each man having his own special horse, for in this way only can we expect to get that bond of union between the two which is so essential to the object in view, *viz.*, getting the best work possible out of the two combined when the crucial time arrives.

Transport.—Up to date by keeping up their grass-cutters, ponies and mules, the Sillahdar Regiments have always been ready to move at a moment's notice and would, therefore, on receipt of orders to move to the front, have got many hours' start of a Non-Sillahdar Regiment quartered in the same station. Government have now recognised this serious defect in the Non-Sillahdar system and are attaching to each regiment 250 mules and 22 carts with their personnel from one of the Government Mule Corps. Whether this plan will work as smoothly as when the pony and syce are dependent upon the sowar and form an integral part of the regiment, time alone can show, but for the purposes of this article we may take it for granted that by this step Government have placed the two systems on an equal footing as regards mobility.

Men.—As regards the men serving under the two systems, my experience goes to show that there is no difference whatever. On the reorganisation of the 27th Light Cavalry, a nucleus of the different classes to be enlisted was obtained from various corps among the Sillahdars. The majority of these men came, not because there was no "Assami" but because they either got promotion or expected to better their prospects in this respect in the new corps. I have never experienced the dearth of suitable recruits as suggested by Captain Tennant, and as it is not an uncommon occurrence for men to apply for transfer from this corps to Sillahdar Regiments and *vice versa* to serve with their brothers or other relatives, the difference of system, as such, would therefore appear to have no bearing upon the point. It is evidently merely a case of where the man thinks he can do best for himself individually, but I shall have more to say upon this point when I deal with the subject from the man's point of view.

Reserves. Horses.—The maintenance of a reserve of horses means the sinking of a large sum of money in a very perishable article for, as Major Mathewes tritely remarks, "horses do not grow younger or sounder." It would therefore appear cheapest in the long run to buy horses when the demand occurred in preference to maintaining them through years of peace.

Government, moreover, has a reserve. I do not, of course, include horses at the Remount Depôts which are primarily intended for British Cavalry and Artillery, but those with the Non-Sillahdar Regiments not mobilised, which would be available without extra expense at once on an emergency, though the practice of denuding one regiment to complete another is eminently unsound and should only be resorted to as a very exceptional measure. Captain Tennant claims a reserve of 125 horses trained or under training for each Sillahdar Regiment. In this I consider he considerably over-estimates, as this would mean that every single horse borne on the rolls of the regiment was at the time actually fit to take on service or would be so in a few months' time. I have only taken the regimental number as I do not consider his total for the whole Sillahdar system can be taken into consideration, any more than the horse reserves of the country at large. These horses being the private property of the men of different regiments could only be obtained by purchase, not transfer, and I do not think any Commanding Officer would be found willing to denude his regiment, even if not mobilised, of 125 sound and trained horses, or even a proportion of them with the ever present hope that more regiments might at any time be required at the front and that his might be one of those detailed.

So that for all practical purposes it may be taken that neither system has anything but a very small reserve to fall back upon, unless horses are obtained at the cost of the efficiency of other corps of the same system.

Reserves. Men.—There is a small reserve of men to each regiment of Sillahdar Cavalry. The Non-Sillahdar have no such thing, Government evidently considering that the linked system could here be applied without much difficulty.

Let us now try and tackle the expense portion of the question. On this point both Major Mathewes and Captain Tennant have gone into considerable detail, but both of them are, I think, considerably wide of the mark. Personally I have for the last two years tried to come to some definite conclusion as to what a Non-Sillahdar Regiment actually costs Government and have failed to do so. The difficulty of getting to the bottom of things can be imagined when such items as the following have to be taken into consideration:—Relative proportion of the pay of Remount, Veterinary, Supply and Ordnance Officers, as well as the Check and Audit Departments and the relative cost of every single article of equipment turned out from the arsenals together with the proportionate pay of their establishments. To dismiss these items by saying the yare not maintained for peace conditions alone appears to be "begging

the question," for there would be no necessity for Government to maintain such large establishments if all Native Cavalry were worked on the Sillahdar system. Surely, therefore, a proportion of the cost of their maintenance is a fair charge against the Non-Sillahdar system which necessitates their upkeep.

Another large item of expense, which cannot be accurately estimated, is the cost of railway freight on all the various stores and supplies of equipment, etc., sent to Non-Sillahdar Regiments. In cases where these goods pass over Government lines it is merely a case of taking money from one pocket and putting it into another, but with private lines all this represents out-of-pocket expenses to Government.

The following are the principal items of expense wherein the two systems differ, leaving the actual pay out of consideration for the present:—

NATIVE ESTABLISHMENT.	...	Considerably larger in <i>Non-Sillahdar</i> Regiments.
LINE GEAR	...	<i>Sillahdar</i> Regiments— <i>Nil</i> . <i>Non-Sillahdar</i> —A contingent allowance of 11 annas per horse per mensem.
TRANSPORT	...	<i>Sillahdar</i> —The capital value of 89 grass mules. <i>Non-Sillahdar</i> .—250 mules and 22 carts from a mule cadre.
TRANSPORT ESTABLISHMENT.	...	<i>Sillahdar</i> — <i>Nil</i> . <i>Non-Sillahdar</i> —Use of Transport personnel from Mule Corps for Transport work only (not for syce or grass-cutters' duties), plus 159 syces at Rs. 7 per month.
FEED OF TRANSPORT AND HORSES.	...	<i>Sillahdar</i> —Does this out of his Horse Allowance. <i>Non-Sillahdar</i> —Government pays all expenses.
LINES	...	<i>Sillahdar</i> —A loan repayable with interest by instalments within 18 years. <i>Non-Sillahdar</i> —Government provide and grant Rs. 100 per mensem for repairs.
CLOTHING	...	<i>Sillahdar</i> — <i>Nil</i> . <i>Non-Sillahdar</i> —Recruit Rs. 40 as kit on enlistment. Allowance of Rs. 17 per annum for men.
TENTAGE	...	<i>Sillahdar</i> — <i>Nil</i> . <i>Non-Sillahdar</i> —Government provide.
ASSAMI	...	<i>Sillahdar</i> —A permanent loan of Rs. 23,000. <i>Non-Sillahdar</i> — <i>Nil</i> .
SPECIAL ALLOWANCES TO SQUADRON COMMANDERS.	...	<i>Sillahdar</i> —Rs. 50 per month. <i>Non-Sillahdar</i> —Rs. 53 per month, but the Squadron Commanders of Non-Sillahdar Regiments have to pay their Pay Dafadars

		out of this allowance. In Sillahdar Regiments these men get an allowance from Government of Rs. 6 per month.
MAINTENANCE OF RIDING SCHOOL GEAR.		<i>Sillahdar</i> — <i>Nil</i> .
		<i>Non-Sillahdar</i> —Rs. 150 a year.
FORGE FUND	...	<i>Sillahdar</i> —Rs. 60 a month.
		<i>Non-Sillahdar</i> —A shoeing allowance of 12 annas for every horse shod on all 4 feet, 6 annas on 2, comes roughly to Rs. 345 a month and is divided amongst the farriers. Government also finds all medicines used in the sick lines.
SADDLERY	...	<i>Sillahdar</i> — <i>Nil</i> .
		<i>Non-Sillahdar</i> —Completely supplied by Government, approximate cost per set Rs. 72.
GRASS	...	Approximately the same for both, what difference there is in favour of the <i>Sillahdar</i> who can sell any balance, thus raising a fund from which the men indirectly benefit.
COMPENSATION FOR DEARNESS OF FORAGE.		Drawn by <i>Sillahdars</i> .
		Not drawn by <i>Non-Sillahdars</i> .
		As the amount varies according to local circumstances, no estimate can be formed.
COMPENSATION FOR DEARNESS OF PROVISIONS.		Liable to be drawn by both, also governed by local circumstances.

The accompanying tabular statement shows more clearly the relative cost, as far as I can make it out, of a regiment under each system.

It will be noticed that I have dealt with the annual cost in each case as it appears to me to convey a truer estimate of the actual cost then dividing up yearly allowances, etc., into minute fractions to represent the monthly expenditure upon individuals.

In estimating the cost of the *Non-Sillahdar* system, I have taken the property in hand to represent the capital expended, and only charged the interest yearly payable upon that capital.

SILLAH DAR.

NON-SILLAH DAR.

		Rs. a. p.		Rs. a. d.
Regimental pay ...	...	2,60,316 0 0	Regimental pay ...	1,05,943 0 0
Staff and extra duty pay ...	...	2,256 0 0	Staff and extra duty pay ...	2,321 0 0
Pay native establishment ...	...	2,412 0 0	Pay native establishment ...	4,722 0 0
Tentage ...	...	...	104 tents at Rs. 32 = Rs. 3,328, Int. at $3\frac{3}{4}\%$...	124 8 0
Horses and camels ...	...	...	Capital Rs. 2,06,200, Int. at $3\frac{3}{4}\%$...	7,732 8 8
Horses and mules' feed ...	...	...	*Horses at Rs. 11-12-0, Mules, Rs. 5-8-7 per month (512 Horses, 250 Mules) grass excluded.	88,801 6 0
Line Gear (para. 241) ...	...	120 0 0	At 11 annas per horse for 512 horses	4,224 0 0
Transport.—89 Mules at Rs. 17½ each, Int. at $3\frac{3}{4}\%$ ...	...	584 0 0	250 mules, 22 carts, capital Rs. 57,270, Int. at $3\frac{3}{4}\%$...	2,147 10 0
Do. Personnel ...	...	...	At Rs. 730 per month ...	8,760 0 0
Assam—Capital Rs. 23,000, Int. at $3\frac{3}{4}\%$ ...	...	862 8 0	Capital Rs. 37,440, Int. at $3\frac{3}{4}\%$...	1,404 0 0
Saddlery ...	...	...	*Capital Rs. 1,70,000, Int. at $3\frac{3}{4}\%$, Rs. 6,375+Rs. 1,200	7,575 0 0
Lines ...	...	...
Syces ...	...	...
Squadron allowance... Repair of riding school ...	...	2,400 0 0		
Forge and shoeing ...	...	720 0 0		
Clothing compensation ...	...	...
			555 Sowars at Rs. 17, 17 N Os. at Rs. 16, 30 Recruits at Rs. 50—	11,207 0 0
			* Local rates.	
	Total	2,69,670 8 0	Total	2,45,462 0 8

Note.—In a Non-Sillahdar Regiment Government invests Rs. 4,74,238 as against Rs. 38,575 in a Sillahdar.

Government gets the services of 17 men and 118 horses more in a Sillahdar than in a Non-Sillahdar Regiment.

Indirect expenditure on account of departments have not been included in the above, nor charges and allowances common to both systems.

Now I will try and set forth the matter from the men's point of view.

As I have said before, I do not consider there is any difference whatever in the class of men enlisting nowadays in the Sillahdar and Non-Sillahdar Regiments.

The native of India, at least the class we get, and want to keep on getting, into our Native Cavalry Regiments, is one of the most conservative mortals. His father, and may be his grandfather, having served in a particular regiment and under a certain system is sufficient to make the recruit consider it his bounden duty to get into that regiment too. The family generally will make what sacrifice they can to further this object, with the result that the Assami money is forthcoming, or rather I should say, that portion of it which the regiment demands in hard cash, for few, if any, recruits can nowadays produce the Rs. 400 or Rs. 500 which represent the full Assami of a Sowar in a Sillahdar Regiment.

With regard to the "Assami" I should here like to refute an argument often used by people not fully conversant with the Sillahdar system, namely, that the Sillahdar is for years in debt for his Assami. On paper this is undoubtedly correct, but practically it is incorrect, for whatever a man has paid in on this account, either in cash or by instalments, that amount, in full, is refunded to him upon his discharge. Thus a man on enlistment pays in cash Rs. 200 towards his Assami of Rs. 450, his book account shows him a balance debtor at once of Rs. 250. He pays Rs. 5 a month towards the discharge of this debt, and at the end of three years demands his discharge, his book account still shows him Rs. 70 in debt for Assami, thus $\text{Rs. } 450 - 200 + (5 \times 36)$, balance Rs. 70; but what really happens is that he gets on discharge all he has paid, viz. :—

$\text{Rs. } 200 + 180 = \text{Rs. } 380$ in hard cash.

Can anything be fairer? I think not.

The right way to look upon the Assami is as a Provident Fund to which a man has to subscribe up to a fixed value during the first years of his service. Our own Military Service Pension Funds are almost an exact parallel; we are all forced to subscribe as a condition of our service in the Indian Army, and, at first, grumble a good deal about it. But later on we accept the wisdom of the measure, though we ourselves personally never reap any benefit from it; whereas the Sillahdar does, for, as I have shown, he personally gets back all he has paid to his Fund.

I have talked the matter over with all classes of men, Sillahdar and Non-Sillahdar, and they are almost all universally agreed that some Provident Fund of this nature (call it Assami, or what you like,) is advisable. The up-country man who knows the Sillahdar system puts it rather pithily when talking of the Non-Sillahdar system, "Nanga ata Nanga jata" is his verdict on there being no Assami.

I was conversing the other day with one of the Madras Native Officers about the two systems, and this question of Assami; his

The principal disadvantages are:

- (1) *The Horse Question*.—Namely the difficulty Commanding Officers have, with the increased cost of remounts, of being able to mount their men efficiently and well.
- (2) *The Recruit Question*.—The difficulty experienced in some regiments in getting recruits with sufficient money to meet the demands of the "Assam" as now required by regiments.

The disadvantages referred to above are the points in which the Non Sillahdar Regiments come to the front as they have no difficulty in obtaining Government remounts or in enlisting suitable recruits.

The disadvantages of this system may be taken as—

- (1) Expense to Government, owing principally to the large sum of money Government has tied up in each regiment.
- (2) Dependence on the various departments of Government which cramps initiative, self-reliance and resource.
- (3) The amount of office work entailed on the Regimental Staff on account of this dependence is enormous and occupies the time of these officers who could be far better employed in the legitimate exercise of their profession than sitting on an office chair.
- (4) Owing to the veterinary system in force Regimental Officers have few opportunities of either improving themselves in practical veterinary knowledge or putting it and the want of this experience would be most seriously felt by them when detached with their squadrons on service.

Both these systems then have their good and their bad points, and it cannot be doubted that it would be a great benefit to the Native Cavalry if one system could be adopted for all the regiments which, while retaining the independence, self-reliance and resource of the Sillahdar system, would do away with its weaknesses and engraft in their stead the advantages of the Non Sillahdar system.

To arrive at anything like a definite opinion on a large and important question of this nature it is necessary to ascertain how it affects the two parties principally concerned.

- (1) The Government.
- (2) The Native Cavalry soldier.

Let us take the Government point of view first. In discussing any military matter affecting the State it would appear that the primary place should be given to efficiency, the second to economy on the ground that a really good article, even if it costs more at first is the cheapest in the long run.

Horses.—As a Cavalry soldier without his horse is of little use, the question of horses naturally demands first place. The amount paid both by Government for the Non Sillahdar horses and by Sillahdar Regiments is now this price, viz. the same as is paid by many Sillahdar Regiments have taken to buying Austrian cars and

Government have adopted the Sillahdar plan of buying the horses at the port of disembarkation and sending them thence direct to regiments. The price is Rs. 400 per horse. Railway fare cannot fairly be considered in the matter as the amount depends entirely on the place where the receiving regiment happens to be quartered and so differs in every instance.

It is an acknowledged fact that each regiment, Sillahdar or Non-Sillahdar, requires yearly 10 per cent of its establishment as remounts to keep it thoroughly efficient and up to present day requirements, that is, Non-Sillahdar Regiments require 50, Sillahdar Regiments 60 remounts yearly.

The question arises, can Sillahdar Regiments afford the purchase of these 60 horses yearly out of their Chanda Fund, composed as it is of the men's horse price, monthly subscriptions and amounts realised by sale of casters? It will be seen that I am here dealing only with the legitimate sources of revenue of this fund, for a good and efficient horse sold means a decrease in the fighting efficiency of the regiment, until the remount bought in its place is ready for the ranks.

There can be only one answer to this question "Certainly not." The horse price represents the value of the original horse and so is not available yearly, the monthly subscriptions average Rs. 1,250 a month. The sale of casters is variable, but I think if an all-round average of Rs. 50 is allowed, casualties being excluded, it is rather over than under the usual amount realised, hence the account works out thus:—

					Rs.
Subscriptions	...	1,205	×	12	...
Sale of casters	60	×	50
					...
				Total	18,000

As against

60 Remounts @ 400	=	24,000
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To raise this Rs. 6,000, other means must be employed to supplement the Chanda Fund, or a cheaper horse must be purchased and this, in horse flesh, means either an immature animal or one of an inferior stamp.

Next comes the feed of the horses. As the Non-Sillahdar can neither make nor lose over the feeding of the horse, it is a matter of indifference to him what actual feed is ordered, as it does not affect his personal pocket in any way. On the contrary, not only every extra pound of grain given to his horse, but the mere fact of feeding the horse on any but the cheapest kind of grain, *does* make a considerable difference in the amount of balance of pay due to the Sillahdar at the end of the month, and is therefore a very personal matter with him.

I am aware that this personal interest is often used as an argument to prove that it makes the man look better after their horses. I contended so myself once, but have come to the conclusion that

the elimination of this personal element in the feeding of the horse is sound; and that the horses, as a whole, are all the better for its non-existence.

Before leaving this subject of the horses there is a side issue that might be touched upon, namely, the difference in the establishment of horses with regard to men under the two systems. The Sillahdar Regiments being mounted up to full strength whereas the Non-Sillahdars are 70 horses short, on this point I am all in favour of the Sillahdar system of one man, one horse. I admit there is a great deal in Major Mathewes' argument in favour of shortness of horses and that the more horses a man rides the better rider he becomes; but more than this is required of the cavalry soldier of to-day. Not only must he be a good rider but he must thoroughly know his horse, its peculiarities both constitutional and physical, what it can do and what it cannot do, when he must save it and when he can push it for all it is worth. This can only be acquired by each man having his own special horse, for in this way only can we expect to get that bond of union between the two which is so essential to the object in view, *viz.* getting the best work possible out of the two combined when the crucial time arrives.

Transport.—Up to date by keeping up their grass-cutters, ponies and mules, the Sillahdar Regiments have always been ready to move at a moment's notice and would, therefore, on receipt of orders to move to the front, have got many hours' start of a Non-Sillahdar Regiment quartered in the same station. Government have now recognised this serious defect in the Non-Sillahdar system and are attaching to each regiment 250 mules and 22 carts with their personnel from one of the Government Mule Corps. Whether this plan will work as smoothly as when the pony and sycamore depend upon the sower and form an integral part of the regiment, time alone can show, but for the purposes of this article we may take it for granted that by this step Government have placed the two systems on an equal footing as regards mobility.

Men.—As regards the men serving under the two systems, my experience goes to show that there is no difference whatever. On the reorganisation of the 27th Light Cavalry, a nucleus of the different classes to be enlisted was obtained from various corps among the Sillahdars. The majority of these men came, not because there was no "Assam," but because they either got promotion or expected to better their prospects in this respect in the new corps. I have never experienced the dearth of suitable recruits as suggested by Captain Tennant, and as it is not an uncommon circumstance for men to apply for transfer from this corps to Sillahdar Regiments and *vice versa*, to serve with their brothers or other relatives the difference of system, as such, would therefore appear to have no bearing upon the point. It is evidently merely a case of where the man thinks he can do best for himself individually, but I shall have more to say upon this point when I deal with the subject from the man's point of view.

Reserves. Horses.—The maintenance of a reserve of horses means the sinking of a large sum of money in a very perishable article for, as Major Mathewes tritely remarks, "horses do not grow younger or sounder." It would therefore appear cheapest in the long run to buy horses when the demand occurred in preference to maintaining them through years of peace.

Government, moreover, has a reserve. I do not, of course, include horses at the Remount Depôts which are primarily intended for British Cavalry and Artillery, but those with the Non-Sillahdar Regiments not mobilised, which would be available without extra expense at once on an emergency, though the practice of denuding one regiment to complete another is eminently unsound and should only be resorted to as a very exceptional measure. Captain Tennant claims a reserve of 125 horses trained or under training for each Sillahdar Regiment. In this I consider he considerably over-estimates, as this would mean that every single horse borne on the rolls of the regiment was at the time actually fit to take on service or would be so in a few months' time. I have only taken the regimental number as I do not consider his total for the whole Sillahdar system can be taken into consideration, any more than the horse reserves of the country at large. These horses being the private property of the men of different regiments could only be obtained by purchase, not transfer, and I do not think any Commanding Officer would be found willing to denude his regiment, even if not mobilised, of 125 sound and trained horses, or even a proportion of them with the ever present hope that more regiments might at any time be required at the front and that his might be one of those detailed.

So that for all practical purposes it may be taken that neither system has anything but a very small reserve to fall back upon, unless horses are obtained at the cost of the efficiency of other corps of the same system.

Reserves. Men.—There is a small reserve of men to each regiment of Sillahdar Cavalry. The Non-Sillahdar have no such thing, Government evidently considering that the linked system could here be applied without much difficulty.

Let us now try and tackle the expense portion of the question. On this point both Major Mathewes and Captain Tennant have gone into considerable detail, but both of them are, I think, considerably wide of the mark. Personally I have for the last two years tried to come to some definite conclusion as to what a Non-Sillahdar Regiment actually costs Government and have failed to do so. The difficulty of getting to the bottom of things can be imagined when such items as the following have to be taken into consideration:—Relative proportion of the pay of Remount, Veterinary, Supply and Ordnance Officers, as well as the Check and Audit Departments and the relative cost of every single article of equipment turned out from the arsenals together with the proportionate pay of their establishments. To dismiss these items by saying the yare not maintained for peace conditions alone appears to be "begging

the question," for there would be no necessity for Government to maintain such large establishments if all Native Cavalry were worked on the Sillahdar system. Surely, therefore, a proportion of the cost of their maintenance is a fair charge against the Non-Sillahdar system which necessitates their upkeep.

Another large item of expense, which cannot be accurately estimated, is the cost of railway freight on all the various stores and supplies of equipment, etc., sent to Non-Sillahdar Regiments. In cases where these goods pass over Government lines it is merely a case of taking money from one pocket and putting it into another, but with private lines all this represents out-of-pocket expenses to Government.

The following are the principal items of expense wherein the two systems differ, leaving the actual pay out of consideration for the present:—

NATIVE ESTABLISHMENT.	Considerably larger in <i>Non-Sillahdar</i> Regiments.
LINE GEAR ...	<i>Sillahdar</i> Regiments— <i>Nil</i> . <i>Non-Sillahdar</i> —A contingent allowance of 11 annas per horse per mensem.
TRANSPORT ...	<i>Sillahdar</i> —The capital value of 89 grass mules. <i>Non-Sillahdar</i> .—250 mules and 22 carts from a mule cadre.
TRANSPORT ESTABLISHMENT.	<i>Sillahdar</i> — <i>Nil</i> . <i>Non-Sillahdar</i> —Use of Transport personnel from Mule Corps for Transport work only (not for syce or grass-cutters' duties), plus 159 syces at Rs. 7 per month.
FEED OF TRANSPORT AND HORSES.	<i>Sillahdar</i> —Does this out of his Horse Allowance. <i>Non-Sillahdar</i> —Government pays all expenses.
LINES ...	<i>Sillahdar</i> —A loan repayable with interest by instalments within 18 years. <i>Non-Sillahdar</i> —Government provide and grant Rs. 100 per mensem for repairs.
CLOTHING ...	<i>Sillahdar</i> — <i>Nil</i> . <i>Non-Sillahdar</i> —Recruit Rs. 40 as kit on enlistment. Allowance of Rs. 17 per annum for men.
TENTAGE ...	<i>Sillahdar</i> — <i>Nil</i> . <i>Non-Sillahdar</i> —Government provide.
ASSAMI ...	<i>Sillahdar</i> —A permanent loan of Rs. 23,000. <i>Non-Sillahdar</i> — <i>Nil</i> .
SPECIAL ALLOWANCES TO SQUADRON COMMANDERS.	<i>Sillahdar</i> —Rs. 50 per month. <i>Non-Sillahdar</i> —Rs. 53 per month, but the Squadron Commanders of <i>Non-Sillahdar</i> Regiments have to pay their Pay Dafadars

		out of this allowance. In Sillahdar Regiments these men get an allowance from Government of Rs. 6 per month.
MAINTENANCE OF RIDING SCHOOL GEAR.	<i>Sillahdar—Nil.</i>	
FORGE FUND ...	<i>Non-Sillahdar—Rs. 150 a year.</i>	
	<i>Sillahdar—Rs. 60 a month.</i>	
	<i>Non-Sillahdar—A shoeing allowance of 12 annas for every horse shod on all 4 feet, 6 annas on 2, comes roughly to Rs. 345 a month and is divided amongst the farriers. Government also finds all medicines used in the sick lines.</i>	
SADDLERY ...	<i>Sillahdar—Nil.</i>	
	<i>Non-Sillahdar—Completely supplied by Government, approximate cost per set Rs. 72.</i>	
GRASS ...	Approximately the same for both, what difference there is in favour of the Sillahdar who can sell any balance, thus raising a fund from which the men indirectly benefit.	
COMPENSATION FOR DEARNESS OF FORAGE.	Drawn by <i>Sillahdars</i> . Not drawn by <i>Non-Sillahdars</i> .	
	As the amount varies according to local circumstances, no estimate can be formed.	
COMPENSATION FOR DEARNESS OF PROVISIONS.	Liable to be drawn by both, also governed by local circumstances.	

The accompanying tabular statement shows more clearly the relative cost, as far as I can make it out, of a regiment under each system.

It will be noticed that I have dealt with the annual cost in each case as it appears to me to convey a truer estimate of the actual cost then dividing up yearly allowances, etc., into minute fractions to represent the monthly expenditure upon individuals.

In estimating the cost of the Non-Sillahdar system, I have taken the property in hand to represent the capital expended, and only charged the interest yearly payable upon that capital.

Now I will try and set forth the matter from the men's point of view.

As I have said before, I do not consider there is any difference whatever in the class of men enlisting nowadays in the Sillahdar and Non-Sillahdar Regiments.

The native of India, at least the class we get, and want to keep on getting, into our Native Cavalry Regiments, is one of the most conservative mortals. His father, and may be his grandfather, having served in a particular regiment and under a certain system is sufficient to make the recruit consider it his bounden duty to get into that regiment too. The family generally will make what sacrifice they can to further this object, with the result that the Assami money is forthcoming, or rather I should say, that portion of it which the regiment demands in hard cash, for few, if any, recruits can nowadays produce the Rs. 400 or Rs. 500 which represent the full Assami of a Sowar in a Sillahdar Regiment.

With regard to the "Assami" I should here like to refute an argument often used by people not fully conversant with the Sillahdar system, namely, that the Sillahdar is for years in debt for his Assami. On paper this is undoubtedly correct, but practically it is incorrect, for whatever a man has paid in on this account, either in cash or by instalments, that amount, in full, is refunded to him upon his discharge. Thus a man on enlistment pays in cash Rs. 200 towards his Assami of Rs. 450, his book account shows him a balance debtor at once of Rs. 250. He pays Rs. 5 a month towards the discharge of this debt, and at the end of three years demands his discharge, his book account still shows him Rs. 70 in debt for Assami, thus Rs. $450 - 200 + (5 \times 36)$, balance Rs. 70; but what really happens is that he gets on discharge all he has paid, viz. :—

Rs. $200 + 180 =$ Rs. 380 in hard cash.

Can anything be fairer? I think not.

The right way to look upon the Assami is as a Provident Fund to which a man has to subscribe up to a fixed value during the first years of his service. Our own Military Service Pension Funds are almost an exact parallel; we are all forced to subscribe as a condition of our service in the Indian Army, and, at first, grumble a good deal about it. But later on we accept the wisdom of the measure, though we ourselves personally never reap any benefit from it; whereas the Sillahdar does, for, as I have shown, he personally gets back all he has paid to his Fund.

I have talked the matter over with all classes of men, Sillahdar and Non-Sillahdar, and they are almost all universally agreed that some Provident Fund of this nature (call it Assami, or what you like,) is advisable. The up-country man who knows the Sillahdar system puts it rather pithily when talking of the Non-Sillahdar system, "Nanga ata Nanga jata" is his verdict on there being no Assami.

I was conversing the other day with one of the Madras Native Officers about the two systems, and this question of Assami; his

reply being well worthy of repetition I give it as nearly verbatim as possible.

"I have never seen the Sillahdar system worked as I have been in the Non-Sillahdar Regiments all my service, but from what the old Sillahdars tell me about it, I am sure it would save many an old soldier from want and having to take menial employment after his Army service was up, if he had even Rs. 200 in cash given over to him when he left the regiment;" adding that he was all in favour of something of the kind being started in the regiment, though not to the extent or amount now required by Sillahdar Regiments.

There are some men who will save money whatever their pay may be and put by for a rainy day, others, and these by far the majority, will not, and it is these that I think we should legislate for.

There can be no doubt which of two men returning at the end of their service to their village, the one with a certain amount of money in hard cash, the other with nothing, has the greater "Izzat," and is most looked up to by the other villagers, even though during his actual service he has cleared a rupee or two less a month, to attain this object, than the other.

The conclusion that I personally have arrived at is, that the system best suited to the modern requirements of Native Cavalry is to be found in a combination of the two existing ones, namely, a system founded in all respects, except as regards horses and transport, on the present Sillahdar one.

To carry out this partial Sillahdar system with Government horses and transport I would make the following suggestions, taking the Sillahdar first, as fewer changes are involved in it:—

Pay.—The present Horse Allowance of Rs. 15 per mensem to cease, as the horse and mule would be supplied and fed by Government.

A Contingent Allowance of Re. 1-0-0 per horse to be allowed to Commanding Officers to cover expenses of Line Gear, Stable Headstalls, etc.

Horses.—In this I know I am treading on most dangerous and delicate ground, namely, taking away from Sillahdar Officers one of their most interesting duties, the purchase of horses for their own regiments. But this can be obviated, and the Remount Department not increased, by Government allowing annually to Commanding Officers the price of 60 remounts— $60 \times 400 = \text{Rs. } 24,000$. Each regiment would then still have its own Remount Officers, the Commanding Officer being responsible for the purchase of efficient horses as at present, Chanda Fund subscriptions would cease and the price of casters be credited to Government; no more horse price or mule chanda to be taken from incoming recruits, present ranks keeping up their present Assamis till discharge.

As Government cannot afford to buy out all the Sillahdar horses straight off, this could be done in 10 years' purchase through the remounts, and any great immediate expense avoided.

Transport.—The same arrangement as for horses.

Feed of horses and mules to be carried out on the system in force for Non-Sillahdar Regiments. The system works smoothly and still allows sufficient latitude to Commanding Officers in the way of regulating the feeds.

Syces.—All syces to be enrolled for general service on Rs. 7 per month and paid by Government as in Non-Sillahdar Regiments.

The Assami.—Would be reduced by the horse price and mule chanda price and therefore come within reasonable limits; it should if possible, be uniform throughout the service, but I doubt if this can be attained.

Non-Sillahdar.—The pay of all ranks to be raised so as to equal that of the Sillahdars minus the Horse Allowance, *i.e.*, Rs. 31—Rs. 15 = Rs. 16 for a Sowar.

The present Line Gear Allowance to be raised to Re. 1 per horse to cover the extra cost of supplying headstalls, etc., at present provided by Government.

Ali equipment, saddling, etc., to be taken over by regiments at a valuation and paid for gradually out of the money recovered from the men as an Assami Fund is formed.

Horses.—To be brought up to full strength, *viz.*, 596 horses and 8 camels; the only dismounted men in the Regiment being the four Ward Orderlies.

Purchasing and casting could be carried on as at present or on the lines recommended under Sillahdar Regiments.

Transport.—As at present, but no personnel.

All syces to be enlisted for General Service as at present, and to be required to look after the mules as in Sillahdar Regiments.

An Assami Fund to be formed, for which I should suggest—

				Rs.
Regimental Fund	...	...	...	32
Saddle Chanda	...	...	...	30
Lines	...	...	...	30
Wordi	...	...	...	50
Arms (Sword Rs. 8, Lance Rs. 7)	...	...	...	15
Tentage	...	...	...	5
Total				162

with monthly cuttings as follows:—from Sowar, others in proportion.

<i>Wordi</i>	{ Rs. 2 if over Rs. 10 in debt. Re. 1 if under Rs. 10 in debt.	
<i>Saddle Chanda</i>	... 4 annas	
<i>Forge Fund</i>	... 8 annas	
<i>Line Repairs</i>	... 8 annas	

These would I think meet the case and yet leave the Sowar a fair balance of pay

the question," for there would be no necessity for Government to maintain such large establishments if all Native Cavalry were worked on the Sillahdar system. Surely, therefore, a proportion of the cost of their maintenance is a fair charge against the Non-Sillahdar system which necessitates their upkeep.

Another large item of expense, which cannot be accurately estimated, is the cost of railway freight on all the various stores and supplies of equipment, etc., sent to Non-Sillahdar Regiments. In cases where these goods pass over Government lines it is merely a case of taking money from one pocket and putting it into another, but with private lines all this represents out-of-pocket expenses to Government.

The following are the principal items of expense wherein the two systems differ, leaving the actual pay out of consideration for the present:

NATIVE ESTABLISHMENT.	Considerably larger in <i>Non-Sillahdar</i> Regiments.
LINE GEAR	<i>Sillahdar</i> Regiments— <i>N/d.</i> <i>Non-Sillahdar</i> —A contingent allowance of 11 annas per horse per mensem.
TRANSPORT	<i>Sillahdar</i> —The capital value of 89 grass mules. <i>Non-Sillahdar</i> .—250 mules and 22 carts from a mule cadre.
TRANSPORT ESTABLISHMENT.	<i>Sillahdar</i> — <i>N/d.</i> <i>Non-Sillahdar</i> —Use of Transport personnel from Mule Corps for Transport work only (not for syce or grass cutters' duties) per 150 syces at Rs. 7 per month.
FEED OF TRANSPORT AND HORSES.	<i>Sillahdar</i> —Does this out of his Horse Allowance. <i>Non-Sillahdar</i> —Government pays all expenses.
LOANS	<i>Sillahdar</i> —A loan repayable with interest by instalments within 15 years. <i>Non-Sillahdar</i> —Government provides a grant Rs. 100 per mensem for repairs.
CLOTHING	<i>Sillahdar</i> — <i>N/d.</i> <i>Non-Sillahdar</i> —Recruit Rs. 40 as kit and equipment. Allowance of Rs. 17 per annum for men.
TENTAGE	<i>Sillahdar</i> — <i>N/d.</i> <i>Non-Sillahdar</i> —Government provides.
ASSAULT	<i>Sillahdar</i> —A permanent fund of Rs. 2,000. <i>Non-Sillahdar</i> — <i>N/d.</i>
SPECIAL ALLOWANCES TO SQUAD LEADERS AND COMMANDERS.	<i>Sillahdar</i> —Rs. 50 per mensem. <i>Non-Sillahdar</i> —Rs. 53 per mensem for all Squadron Commanders of <i>Non-Sillahdar</i> Regiments have to pay their Pay Detachments.

		out of this allowance. In Sillahdar Regiments these men get an allowance from Government of Rs. 6 per month.
MAINTENANCE OF RIDING SCHOOL GEAR.		<i>Sillahdar</i> — <i>Nil</i> . <i>Non-Sillahdar</i> —Rs. 150 a year.
FORGE FUND	...	<i>Sillahdar</i> —Rs. 60 a month. <i>Non-Sillahdar</i> —A shoeing allowance of 12 annas for every horse shod on all 4 feet, 6 annas on 2, comes roughly to Rs. 345 a month and is divided amongst the farriers Government also finds all medicines used in the sick lines.
SADDLERY	...	<i>Sillahdar</i> — <i>Nil</i> . <i>Non-Sillahdar</i> —Completely supplied by Government, approximate cost per set Rs. 72.
GRASS	...	Approximately the same for both, what difference there is in favour of the <i>Sillahdar</i> who can sell any balance, thus raising a fund from which the men indirectly benefit.
COMPENSATION FOR DEARNESS OF FORAGE.		Drawn by <i>Sillahdars</i> . Not drawn by <i>Non-Sillahdars</i> . As the amount varies according to local circumstances, no estimate can be formed.
COMPENSATION FOR DEARNESS OF PROVISIONS.		Liable to be drawn by both, also governed by local circumstances.

The accompanying tabular statement shows more clearly the relative cost, as far as I can make it out, of a regiment under each system.

It will be noticed that I have dealt with the annual cost in each case as it appears to me to convey a truer estimate of the actual cost then dividing up yearly allowances, etc., into minute fractions to represent the monthly expenditure upon individuals.

In estimating the cost of the *Non-Sillahdar* system, I have taken the property in hand to represent the capital expended, and only charged the interest yearly payable upon that capital.

SILLAH DAR.

NON-SILLAH DAR.

	Rs. a. p.	Rs. a. d.
Regimental pay ...	2,00 16 0 0	1,05,943 0 0
Staff and extra duty pay ...	2,26 0 0	2,821 0 0
Pay native establishment ...	2,44 2 0 0	4,722 0 0
Pay tent at Rs. 32. Re. 3 92s. Int. at 3% ...	1	124 8 0
Capital Rs. 2,04,250 Int. at 3% ...	1	7,732 8 2
Horses at Rs. 11 12 0 Mules Re. 5 8 7 per month 512 ...	...	88,801 6 0
Horses 250 Mules 200, grass excluded.	...	...
At 11 annas per horse for 512 horses ...	...	4,224 0 0
250 mules 22 carts, capital Rs. 57,270, Int. at 3% ...	...	2,147 10 0
At Rs. 7 80 per month ...	...	5,760 0 0
Capital Rs. 37,440 Int. at 3% ...	...	1,404 0 0
Capital Rs. 1,50,000 Int. at 3% ...	...	7,575 0 0
555 Sappers at Rs. 17 17 N. Co. at Rs. 16, 30 Recruits at Rs. 50 ...	...	11,207 0 0
Local rates.		...
Total ...	2,45,462 0 8	...

A. C. The Non-Sillah Dar cost for recruitment invests Rs. 471,275 as against Rs. 38,575 in a Sillah Dar.

to recruit gets the services of 17 men and 113 horses more in a Sillah Dar than in a Non-Sillah Dar Regiment. But cost of maintenance of depots is not included in the above, nor charges and allowances continue to both systems.

Now I will try and set forth the matter from the men's point of view.

As I have said before, I do not consider there is any difference whatever in the class of men enlisting nowadays in the Sillahdar and Non-Sillahdar Regiments.

The native of India, at least the class we get, and want to keep on getting, into our Native Cavalry Regiments, is one of the most conservative mortals. His father, and may be his grandfather, having served in a particular regiment and under a certain system is sufficient to make the recruit consider it his bounden duty to get into that regiment too. The family generally will make what sacrifice they can to further this object, with the result that the Assami money is forthcoming, or rather I should say, that portion of it which the regiment demands in hard cash, for few, if any, recruits can nowadays produce the Rs. 400 or Rs. 500 which represent the full Assami of a Sowar in a Sillahdar Regiment.

With regard to the "Assami" I should here like to refute an argument often used by people not fully conversant with the Sillahdar system, namely, that the Sillahdar is for years in debt for his Assami. On paper this is undoubtedly correct, but practically it is incorrect, for whatever a man has paid in on this account, either in cash or by instalments, that amount, in full, is refunded to him upon his discharge. Thus a man on enlistment pays in cash Rs. 200 towards his Assami of Rs. 450, his book account shows him a balance debtor at once of Rs. 250. He pays Rs. 5 a month towards the discharge of this debt, and at the end of three years demands his discharge, his book account still shows him Rs. 70 in debt for Assami, thus $\text{Rs. } 450 - 200 + (5 \times 36)$, balance Rs. 70; but what really happens is that he gets on discharge all he has paid, *viz.* :—

$\text{Rs. } 200 + 180 = \text{Rs. } 380$ in hard cash.

Can anything be fairer? I think not.

The right way to look upon the Assami is as a Provident Fund to which a man has to subscribe up to a fixed value during the first years of his service. Our own Military Service Pension Funds are almost an exact parallel; we are all forced to subscribe as a condition of our service in the Indian Army, and, at first, grumble a good deal about it. But later on we accept the wisdom of the measure, though we ourselves personally never reap any benefit from it; whereas the Sillahdar does, for, as I have shown, he personally gets back all he has paid to his Fund.

I have talked the matter over with all classes of men, Sillahdar and Non-Sillahdar, and they are almost all universally agreed that some Provident Fund of this nature (call it Assami, or what you like,) is advisable. The up-country man who knows the Sillahdar system puts it rather pithily when talking of the Non-Sillahdar system, "Nanga ata Nanga jata" is his verdict on there being no Assami.

I was conversing the other day with one of the Madras Native Officers about the two systems, and this question of Assami; his

the question," for there would be no necessity for Government to maintain such large establishments if all Native Cavalry were worked on the Sillahdar system. Surely, therefore, a proportion of the cost of their maintenance is a fair charge against the Non-Sillahdar system which necessitates their upkeep.

Another large item of expense, which cannot be accurately estimated, is the cost of railway freight on all the various stores and supplies of equipment, etc. sent to Non-Sillahdar Regiments. In cases where these goods pass over Government lines it is merely a case of taking money from one pocket and putting it into another, but with private lines all this represents out-of-pocket expenses to Government.

The following are the principal items of expense wherein the two systems differ, leaving the actual pay out of considerable for the present:—

NATIVE ESTABLISHMENT.	Considerably larger in <i>Non-Sillahdar</i> Regiments.
LINE GEAR	<i>Sillahdar</i> Regiments— <i>Nd.</i> <i>Non-Sillahdar</i> —A contingent allowance of 11 annas per horse per mensem.
TRANSPORT	<i>Sillahdar</i> —The capital value of 89 grass mules. <i>Non-Sillahdar</i> .—250 mules and 22 carts (on a mule cadre)
TRANSPORT ESTABLISHMENT.	<i>Sillahdar</i> — <i>Nd.</i> <i>Non-Sillahdar</i> —Use of Transport personnel from Mule Corps for Transport work only (not for syce or grass cutters' duties) plus 159 syces at Rs. 7 per month.
FEED OF TRANSPORT AND HORSES.	<i>Sillahdar</i> —Does this out of his Horse Allowance. <i>Non-Sillahdar</i> —Government pays all expenses.
LOANS	<i>Sillahdar</i> —A loan repayable with interest by instalments within 15 years. <i>Non-Sillahdar</i> —Government provides a grant Rs. 100 per mensem for repairs.
CLOTHING	<i>Sillahdar</i> — <i>Nd.</i> <i>Non-Sillahdar</i> —Recruit Rs. 40 as kit of equipment. Allowance of Rs. 17 per annum for men.
TENTAGE	<i>Sillahdar</i> — <i>Nd.</i> <i>Non-Sillahdar</i> —Government provides.
ASSAM	<i>Sillahdar</i> —A permanent loan of Rs. 25,000. <i>Non-Sillahdar</i> — <i>Nd.</i>
SPECIAL ALLOWANCES TO SQUADRON COMMANDERS	<i>Sillahdar</i> —Rs. 50 per month. <i>Non-Sillahdar</i> —Rs. 53 per month. Squadron Commanders of <i>Non-Sillahdar</i> Regiments have to pay their Pay Detach-

		out of this allowance. In Sillahdar Regiments these men get an allowance from Government of Rs. 6 per month.
MAINTENANCE OF RIDING SCHOOL GEAR.		<i>Sillahdar</i> — <i>Nil</i> .
		<i>Non-Sillahdar</i> —Rs. 150 a year.
FORGE FUND	...	<i>Sillahdar</i> —Rs. 60 a month.
		<i>Non-Sillahdar</i> —A shoeing allowance of 12 annas for every horse shod on all 4 feet, 6 annas on 2, comes roughly to Rs. 345 a month and is divided amongst the farriers. Government also finds all medicines used in the sick lines.
SADDLERY	...	<i>Sillahdar</i> — <i>Nil</i> .
		<i>Non-Sillahdar</i> —Completely supplied by Government, approximate cost per set Rs. 72.
GRASS	...	Approximately the same for both, what difference there is in favour of the <i>Sillahdar</i> who can sell any balance, thus raising a fund from which the men indirectly benefit.
COMPENSATION FOR DEARNESS OF FORAGE.		Drawn by <i>Sillahdars</i> .
		Not drawn by <i>Non-Sillahdars</i> .
		As the amount varies according to local circumstances, no estimate can be formed.
COMPENSATION FOR DEARNESS OF PROVISIONS.		Liable to be drawn by both, also governed by local circumstances.

The accompanying tabular statement shows more clearly the relative cost, as far as I can make it out, of a regiment under each system.

It will be noticed that I have dealt with the annual cost in each case as it appears to me to convey a truer estimate of the actual cost than dividing up yearly allowances, etc., into minute fractions to represent the monthly expenditure upon individuals.

In estimating the cost of the *Non-Sillahdar* system, I have taken the property in hand to represent the capital expended, and only charged the interest yearly payable upon that capital.

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The following are the principal items of expense wherein the two systems differ, leaving the actual pay out of consideration for the present:-

NATIVE ESTABLISHMENT.	Considerably larger in <i>Non-Sillahdar</i> Regiments.
LINE GEAR	<i>Sillahdar</i> Regiments— <i>N/d.</i> <i>Non-Sillahdar</i> —A contingent allowance of 11 annas per horse per mensem.
TRANSPORT	<i>Sillahdar</i> —The capital value of 80 grass mules. <i>Non-Sillahdar</i> .—250 mules and 22 carts from a mule cadre.
TRANSPORT ESTABLISHMENT.	<i>Sillahdar</i> — <i>N/d.</i> <i>Non-Sillahdar</i> —Use of Transport purchased from Mule Corps for Transport work only (not for syce or grass cutters' duties) up to 159 syces at Rs. 7 per month.
FEED OF TRANSPORT AND HORSES.	<i>Sillahdar</i> —Does this out of his Horse Allowance. <i>Non-Sillahdar</i> —Government pays all expenses.
LOANS	<i>Sillahdar</i> —A loan repayable with interest by instalments within 15 years. <i>Non-Sillahdar</i> —Government provides a grant Rs. 100 per mensem for repairs.
CLOTHING	<i>Sillahdar</i> — <i>N/d.</i> <i>Non-Sillahdar</i> —Recruit Rs. 40 as kit of equipment. Allowance of Rs. 17 per annum for men.
TENTAGE	<i>Sillahdar</i> — <i>N/d.</i> <i>Non-Sillahdar</i> —Government provides.
ASSAULT	<i>Sillahdar</i> —A permanent loan of Rs. 25,000. <i>Non-Sillahdar</i> — <i>N/d.</i>
SPECIAL ALLOWANCES TO SQUADRON COMMANDERS	<i>Sillahdar</i> —Rs. 50 per month. <i>Non-Sillahdar</i> —Rs. 53 per month. Squadron Commanders of <i>Non-Sillahdar</i> Regiments have to pay their Pay Duties

		out of this allowance. In Sillahdar Regiments these men get an allowance from Government of Rs. 6 per month.
MAINTENANCE OF RIDING SCHOOL GEAR.		<i>Sillahdar—Nil.</i> <i>Non-Sillahdar—Rs. 150 a year.</i>
FORGE FUND	...	<i>Sillahdar—Rs. 60 a month.</i> <i>Non-Sillahdar—A shoeing allowance of 12 annas for every horse shod on all 4 feet, 6 annas on 2, comes roughly to Rs. 345 a month and is divided amongst the farriers Government also finds all medicines used in the sick lines.</i>
SADDLERY	...	<i>Sillahdar—Nil.</i> <i>Non-Sillahdar—Completely supplied by Government, approximate cost per set Rs. 72.</i>
GRASS	...	Approximately the same for both, what difference there is in favour of the Sillahdar who can sell any balance, thus raising a fund from which the men indirectly benefit.
COMPENSATION FOR DEARNESS OF FORAGE.		Drawn by <i>Sillahdars</i> . Not drawn by <i>Non-Sillahdars</i> . As the amount varies according to local circumstances, no estimate can be formed.
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In estimating the cost of the Non-Sillahdar system, I have taken the property in hand to represent the capital expended, and only charged the interest yearly payable upon that capital.

SILLAH DAR.

NON-SILLAH DAR.

	SILLAH DAR.	Rs. a. p.	NON-SILLAH DAR.	Rs. a. d.
Regimental pay	2,60,316 0 0	Regimental pay ...	1,05,943 0 0
Staff and extra duty pay	2,256 0 0	Staff and extra duty pay ...	2,821 0 0
Pay native establishment	2,412 0 0	Pay native establishment ...	4,722 0 0
Tentage	104 tents at Rs. 32 = Rs. 3,328, Int. at $3\frac{3}{4}\%$...	124 8 0
Horses and camels	Capital Rs. 2,06,200, Int. at $3\frac{3}{4}\%$...	7,732 8 8
Horses and mules' feed	*Horses at Rs. 11-12-0, Mules, Rs. 5-8-7 per month (512 Horses, 250 Mules) grass excluded.	88,801 6 0
Line Gear (para. 241)	120 0 0	At 11 annas per horse for 512 horses	4,224 0 0
Transport.—89 Mules at Rs. 17½ each, Int. at $3\frac{3}{4}\%$	584 0 0	250 mules, 22 carts, capital Rs. 57,270, Int. at $3\frac{3}{4}\%$...	2,147 10 0
Do. Personnel	At Rs. 730 per month ...	8,760 0 0
Assami—Capital Rs. 23,000, Int. at $3\frac{3}{4}\%$	862 8 0	Capital Rs. 37,440, Int. at $3\frac{3}{4}\%$...	1,404 0 0
Saddlery	*Capital Rs. 1,70,000, Int. at $3\frac{3}{4}\%$, Rs. 6,375+Rs. 1,200	7,575 0 0
Lines		
Syces		
Squadron allowance...	2,400 0 0		
Repair of riding school		
Forge and shoeing	720 0 0		
Clothing compensation	555 Sowars at Rs. 17, 17 N.Os. at Rs. 16, 30 Recruits at Rs. 50—	11,207 0 0
			* Local rates.	
Total	...	2,69,670 8 0	Total	2,45,462 0 8

Note.—In a Non-Sillahdar Regiment Government invests Rs. 4,74,238 as against Rs. 38,575 in a Sillahdar.

Government gets the services of 17 men and 113 horses more in a Sillahdar than in a Non-Sillahdar Regiment.

Indirect expenditure on account of departments have not been included in the above, nor charges and allowances common to both systems.

Now I will try and set forth the matter from the men's point of view.

As I have said before, I do not consider there is any difference whatever in the class of men enlisting nowadays in the Sillahdar and Non-Sillahdar Regiments.

The native of India, at least the class we get, and want to keep on getting, into our Native Cavalry Regiments, is one of the most conservative mortals. His father, and may be his grandfather, having served in a particular regiment and under a certain system is sufficient to make the recruit consider it his bounden duty to get into that regiment too. The family generally will make what sacrifice they can to further this object, with the result that the Assami money is forthcoming, or rather I should say, that portion of it which the regiment demands in hard cash, for few, if any, recruits can nowadays produce the Rs. 400 or Rs. 500 which represent the full Assami of a Sowar in a Sillahdar Regiment.

With regard to the "Assami" I should here like to refute an argument often used by people not fully conversant with the Sillahdar system, namely, that the Sillahdar is for years in debt for his Assami. On paper this is undoubtedly correct, but practically it is incorrect, for whatever a man has paid in on this account, either in cash or by instalments, that amount, in full, is refunded to him upon his discharge. Thus a man on enlistment pays in cash Rs. 200 towards his Assami of Rs. 450, his book account shows him a balance debtor at once of Rs. 250. He pays Rs. 5 a month towards the discharge of this debt, and at the end of three years demands his discharge, his book account still shows him Rs. 70 in debt for Assami, thus $\text{Rs. } 450 - 200 + (5 \times 36)$, balance Rs. 70; but what really happens is that he gets on discharge all he has paid, viz. :—

$\text{Rs. } 200 + 180 = \text{Rs. } 380$ in hard cash.

Can anything be fairer? I think not.

The right way to look upon the Assami is as a Provident Fund to which a man has to subscribe up to a fixed value during the first years of his service. Our own Military Service Pension Funds are almost an exact parallel; we are all forced to subscribe as a condition of our service in the Indian Army, and, at first, grumble a good deal about it. But later on we accept the wisdom of the measure, though we ourselves personally never reap any benefit from it; whereas the Sillahdar does, for, as I have shown, he personally gets back all he has paid to his Fund.

I have talked the matter over with all classes of men, Sillahdar and Non-Sillahdar, and they are almost all universally agreed that some Provident Fund of this nature (call it Assami, or what you like,) is advisable. The up-country man who knows the Sillahdar system puts it rather pithily when talking of the Non-Sillahdar system, "Nanga ata Nanga jata" is his verdict on there being no Assami.

I was conversing the other day with one of the Madras Native Officers about the two systems, and this question of Assami; his

reply being well worthy of repetition I give it as nearly verbatim as possible.

"I have never seen the Sillahdar system worked as I have been in the Non-Sillahdar Regiments all my service, but from what the old Sillahdars tell me about it, I am sure it would save many an old soldier from want and having to take menial employment after his Army service was up, if he had even Rs. 200 in cash given over to him when he left the regiment;" adding that he was all in favour of something of the kind being started in the regiment, though not to the extent or amount now required by Sillahdar Regiments.

There are some men who will save money whatever their pay may be and put by for a rainy day, others, and these by far the majority, will not, and it is these that I think we should legislate for.

There can be no doubt which of two men returning at the end of their service to their village, the one with a certain amount of money in hard cash, the other with nothing, has the greater "Izzat," and is most looked up to by the other villagers, even though during his actual service he has cleared a rupee or two less a month, to attain this object, than the other.

The conclusion that I personally have arrived at is, that the system best suited to the modern requirements of Native Cavalry is to be found in a combination of the two existing ones, namely, a system founded in all respects, except as regards horses and transport, on the present Sillahdar one.

To carry out this partial Sillahdar system with Government horses and transport I would make the following suggestions, taking the Sillahdar first, as fewer changes are involved in it:—

Pay.—The present Horse Allowance of Rs. 15 per mensem to cease, as the horse and mule would be supplied and fed by Government.

A Contingent Allowance of Re. 1-0-0 per horse to be allowed to Commanding Officers to cover expenses of Line Gear, Stable Headstalls, etc.

Horses.—In this I know I am treading on most dangerous and delicate ground, namely, taking away from Sillahdar Officers one of their most interesting duties, the purchase of horses for their own regiments. But this can be obviated, and the Remount Department not increased, by Government allowing annually to Commanding Officers the price of 60 remounts— $60 \times 400 = \text{Rs. } 24,000$. Each regiment would then still have its own Remount Officers, the Commanding Officer being responsible for the purchase of efficient horses as at present, Chanda Fund subscriptions would cease and the price of casters be credited to Government; no more horse price or mule chanda to be taken from incoming recruits, present ranks keeping up their present Assamis till discharge.

As Government cannot afford to buy out all the Sillahdar horses straight off, this could be done in 10 years' purchase through the remounts, and any great immediate expense avoided.

Transport.—The same arrangement as for horses.

Feed of horses and mules to be carried out on the system in force for Non-Sillahdar Regiments. The system works smoothly and still allows sufficient latitude to Commanding Officers in the way of regulating the feeds.

Syces.—All syces to be enrolled for general service on Rs. 7 per month and paid by Government as in Non-Sillahdar Regiments.

The Assami.—Would be reduced by the horse price and mule chanda price and therefore come within reasonable limits; it should if possible, be uniform throughout the service, but I doubt if this can be attained.

Non-Sillahdar.—The pay of all ranks to be raised so as to equal that of the Sillahdars minus the Horse Allowance, *i.e.*, Rs. 31—Rs. 15 = Rs. 16 for a Sowar.

The present Line Gear Allowance to be raised to Re. 1 per horse to cover the extra cost of supplying headstalls, etc., at present provided by Government.

Ali equipment, saddling, etc., to be taken over by regiments at a valuation and paid for gradually out of the money recovered from the men as an Assami Fund is formed.

Horses.—To be brought up to full strength, *viz.*, 596 horses and 8 camels; the only dismounted men in the Regiment being the four Ward Orderlies.

Purchasing and casting could be carried on as at present or on the lines recommended under Sillahdar Regiments.

Transport.—As at present, but no personnel.

All syces to be enlisted for General Service as at present, and to be required to look after the mules as in Sillahdar Regiments.

An *Assami Fund* to be formed, for which I should suggest—

				Rs.
Regimental Fund	...	...	...	32
Saddle Chanda	...	...	...	30
Lines	...	...	...	30
Wordi	...	...	...	50
Arms (Sword Rs. 8, Lance Rs. 7)	...	...	...	15
Tentage	...	...	...	5
Total				162

with monthly cuttings as follows:—from Sowar, others in proportion.

<i>Wordi</i>	{ Rs. 2 if over Rs. 10 in debt. Re. 1 if under Rs. 10 in debt.	
<i>Saddle Chanda</i>	...	4 annas
<i>Forge Fund</i>	...	8 annas
<i>Line Repairs</i>	...	8 annas

These would I think meet the case and yet leave the Sowar a fair balance of pay

Eurasian Trumpeters and Farriers to be done away with; the veterinary charge of the regiment to devolve upon the Commanding Officer with trained Salutris and Nalbunds.

I do not for a moment suppose that a better combination of the two systems cannot be proposed; for instance, many Native Officers I have talked to would keep the feeding of the horses and mules exactly as at present in Sillahdar Regiments merely relieving the Sowar of his Assami towards those funds and reducing his pay by the amount of subscriptions paid to them by him. From the Government point of view this would be a cheaper one than that I have proposed.

If Captain Tennant's contention that the Sillahdar "is greatly underpaid," and from my past experience and what I have heard lately this statement would appear to be to some extent correct, Government will have ere long to step in and assist the men in some way or other, either directly by an increase of pay, or indirectly by loans to their Funds. The present time, therefore, when reorganisation and increased efforts towards efficiency are the order of the day, would appear especially opportune to start a new system.

In conclusion, I will mention some of the advantages which I think the system I have proposed would carry with it—

- (1) A smaller Assami, which all men could bring with them and so save the cuttings on this account.
- (2) A living wage to the Sowar after his regimental cuttings had been met.
- (3) Commanding Officers relieved of all the anxiety and worry at present experienced in trying to mount their regiments well out of an insufficient Chanda Fund.
- (4) Regiments well and serviceably mounted, leaving at the Depôt only remounts under training and horses temporarily sick, thus forming the nucleus of an actual and serviceable Reserve.
- (5) A cheap and efficient transport—regiments on mobilisation would take their transport with them, finding their own supervising staff. The mules of regiments not mobilised would be available for general service under a supervising staff found by the regiments supplying the transport, with the great advantage of all the men knowing each other from having worked continually together in peace time.
- (6) Abolition of compensation for dearness of forage and a reduction of indirect expenditure by a corresponding decrease in the maintenance and upkeep of departments during peace time.
- (7) And lastly, and by no means least, a continuity of system in peace and war.

THE BATTLEFIELDS OF NORTH ITALY.

BY LT.-COL. THE HON. E. NOEL.

V.

MANTUA.

The Fortress of MANTUA attained great renown during the campaign of 1796-97 as the pivot of prolonged operations. Its situation is peculiar. The river MINCIO, flowing from north to south from Lake GARDA to the Po, takes an eastern turn a little above MANTUA, and expands into a lake, and then at MANTUA turns again to the south and a little further on narrows once more to a river.

MANTUA lies on the right bank just in the southward bend of the lake, into which it protrudes somewhat so that it has water on three sides giving a river or lake face of about 4,000 yards. Its fourth, or land, face is about 2,500 yards. It has two important outworks beyond the lake, the larger, called the Citadel, on the north, and the lesser, St. George, on the east side. Both are connected with the town by masonry causeways, by which the lake is divided into three parts at slightly different levels and known as the upper, middle, and lower lakes. The upper may be a thousand yards across at its widest, the middle and lower about half that width. The lake is not clear blue water, but marshy and overgrown with weeds, and in hot weather becomes very shallow. It connects with marshes, and the whole ground about is very low and swampy.

These marshes, at the period with which we are dealing, extended almost all across the land face, and furthermore could be inundated from the upper lake. During the siege the French attempted to break the north causeway with artillery fire in order to lower the level of the upper lake and thus to some extent drain the marshes on the land face. That they failed is evidence of the solidity with which this causeway was constructed. The garrison including some cavalry consisted of 13,000 men; there were over three hundred guns and the place was provisioned for four months. The position of this fortress was not good. Although advantageous for pure defence it was unfavourable for offensive movements. It was a difficult place for an army to debouch from, and a smaller force outside could hold a larger one inside, while its swampy and confined situation rendered it unhealthy.

It was on the 4th June 1796 that the French army approached the Fortress, and the outwork of St. George was captured the same day. An intended assault across the lower lake had to be abandoned owing to the water sinking too low to allow boats to cross. The siege train having come up, the trenches were opened on the 18th July, and an entrenched camp at the south-east end of the land face was carried on the evening of that day.

The siege was pressed with vigour, and the place would probably have had to surrender soon but for the arrival, towards the end of this month, of Marshal WURMSER with a large army to relieve it. On the morning of the last day of July the garrison were astonished to find that the besieging force had abandoned the whole of their siege artillery and departed. The relieving force appeared the same day, and on the 1st August WURMSER made his formal entry.

MANTUA was relieved; WURMSER had attained his object. Yes indeed, yet no! His triumph was short lived. He heard the same night that his subordinate QUASDANOVICH, who had come down the west side of lake GARDA, was in difficulties. The wily BONAPARTE had drawn off the besieging troops, not to retreat, but to enable him to fall with superior force on the weaker of the two Austrian columns.

WURMSER acted rightly in marching to give a hand to his lieutenant, but it is difficult to account for the slowness of his movements. The distance from MANTUA to CASTIGLIONE, barely twenty-five miles, could have been covered in one forced march: his advanced guard indeed, which was already on the MINCIO at GOITO, reached this point on the afternoon of the 2nd to be expelled the following afternoon by AUGEREAU, while the main body was not ready for action until the 5th at a point nearer even than CASTIGLIONE itself. Here he was defeated by BONAPARTE who had routed QUASDANOVICH on the two previous days. He had however put a fresh garrison of 15,000 men into MANTUA, with a fresh store of provisions.

About the 9th August the French forces again invested MANTUA. As they had no longer a siege train there was no more "siege" strictly speaking; they could only maintain a blockade until the place should be starved out. The blockading force henceforth was generally about 10,000, at times even less.

In the month of September WURMSER again advanced to relieve MANTUA, was severely defeated at BASSANO and after a hot chase succeeded in reaching the place from the east with a beaten remnant of 12,000 men, closely pursued by two Divisions under BONAPARTE. On the 15th he engaged the French outside the fortress on the eastern side, was defeated and driven in with the loss of 2,000 men and 20 guns, and the French captured for the second time the eastern outwork of St. George. The garrison now amounted to 25,000 including 5,000 cavalry. Several sorties were made in the course of the next few weeks, but led to no result. On the 18th October an attempt to retake St. George by escalade failed. By the end of this month there were as many as 9,000 sick and the garrison was beginning to feed on horse flesh.

The new Austrian commander ALVINZI had now to undertake the task of relieving MANTUA, and advanced for this purpose from the north-east early in November, but having been foiled by BONAPARTE at the battle of ARCOLE he never got anywhere near his objective. When BONAPARTE drew away 3,000 men to garrison VERONA, the

blockading force must have been reduced to about 6,000. WURMSER of course did not know this and let the opportunity pass. When he did make his sorties on the 23rd these troops had returned, and after a sharp fight he was driven back.

The fourth and last effort to relieve this fortress was made early in the next year 1797. While ALVINZI with the main army coming from the north met with a disastrous defeat at RIVOLI on the 14th January, his subordinate, PROVERA, from the east succeeded in reaching MANTUA, but with only about 7,000 men, on the 15th. He failed in an attempt on the outwork of St. George and then moved to the north side of the fortress so as to be in communication with the garrison by the Citadel outwork.

He was followed by AUGEREAU's Division, and BONAPARTE by a rapid night march from RIVOLI with MASSENA's Division came down from the north. SERRURIER, who commanded the blockading Division, occupied a position on the north near the farms of S. ANTONIO and LA FAVORITA. These posts were attacked by WURMSER early on the morning of the 16th but, after a first success, he was forced back into the fortress. Thus left to himself and attacked on all sides by superior forces PROVERA had to lay down his arms.

WURMSER, although thus deprived of all hope, held out as long as his food lasted. He capitulated on the 2nd February, by which time all the cavalry horses had been eaten, and the garrison was reduced to 18,000, half of whom were sick in hospital. The French found in the fortress 500 guns including those which they had left on raising the siege in July, and which had nearly all been previously captured from the Austrians. From first to last the siege had lasted eight months; six months from the first relief, and four and a half from the time that WURMSER was driven in. The defence was honourable to WURMSER and his brave soldiers, and BONAPARTE showed his appreciation of this by allowing the Marshal to march away with an escort of seven hundred men and six guns.

By this remarkable siege, this fortress earned an exaggerated reputation, owing chiefly to the great Napoleon not having been able to take it except by hunger; but its prolonged resistance was due to the abandonment of the siege train, and the inability of the army inside to break the blockade of an inferior force is proof of the military shortcomings of its situation.

MANTUA is well known to classical scholars as the reputed birthplace of VIRGIL, as expressed in the opening words of his epitaph, written it is said by himself, "*Mantua me genuit.*" His actual birthplace however was ANDES, supposed to be identical with PIETOLE, a small village about three miles to the south-east. The modern town is not unmindful of her distinguished citizen of ancient times, and has a large piazza, the fashionable promenade of the place looking on to the middle lake, named after him.

Many Englishmen will also remember MANTUA as the opening scene of the fifth act of ROMEO and JULIET. It was here that ROMEO

repaired on his banishment from VERONA, and here, that on learning from his servant BALTHASAR of Juliet's death, he purchased from an apothecary a "dram of poison" for forty ducats. Modern ingenuity, which has found in VERONA a "tomb of Juliet," now shown to gullible tourists for a small charge, has not done the same for the apothecary's dwelling so graphically described by Shakespeare.

MANTUA is a bishop's see, the dome of whose cathedral is a conspicuous object from a considerable distance in the surrounding flats. The see was held by the present Pope before his elevation to the archbishopric of VENICE. The most interesting object to the ordinary traveller is the palace of the GONZAGAS—called the *Corte Reale*—near the gate of the causeway leading to the outwork of St. George. This palace contains many works of art and a curious range of dwarfs' apartments. It was the home of the celebrated and accomplished ISABEL D'ESTE, and in later times was inhabited by NAPOLEON I, and his stepson EUGENE, the Viceroy of Italy.

Within less than two years, when the war broke out again in Italy in 1799, MANTUA stood another siege. This second siege was in many respects in remarkable contrast with the first. As the rôles of besiegers and besieged were inverted, so also were most of the circumstances of the two affairs very different. In the first the forces inside were more numerous than those outside the fortress; in the second the besieging force exceeded the garrison more than two-fold. In the first there was a strong army endeavouring to relieve the fortress; in the second the besieged had from the outset no hope of relief. The first was in the beginning a regular siege, followed by a prolonged blockade; the second was a blockade, in due course converted into a regular siege. Lastly, while in the first all the most important events took place on the lake face or out in the country beyond, in the second the attack was directed principally against the land face.

This face has an important outwork, called the horn work of PRADELLA, at its north-west end where it abuts on the upper lake, and covering the sluices by which the water from this lake can be let into the marsh of PAJOLO, which extends more or less across the whole land face. This marsh is crossed by two causeways, one leading west and the other south.

The French garrison consisted of less than 12,000 men including six hundred cavalry, not all regular troops, and many of them newly raised conscripts. They were commanded by General FOISSAC, an Engineer Officer, who had been ordered the year before to draw up a new scheme of fortification for MANTUA and had arrived at the opinion that the place could not stand a regular siege.

The besieging force were 30,000 under General BARON KRAY. The place had been more or less blockaded ever since the battle of MAGNANO in April, but the regular siege was not opened until after the battle of the TREBBIA, 19th June. On the night of the 5th July the Austrians broke ground before the land face, and a week later before the Citadel on the north side. On the 9th they failed in an assault on the south gate.

Trenches were opened on the night of the 14th July, while the garrison were celebrating the taking of the BASTILLE, still kept in France as the *Fête de la République*. The second parallel was begun on the night of the 16th. By the 24th all the siege works were completed and 110 guns thundered on the upper portion of the land face. On this night another assault was repulsed, but the end was near. The outwork of St. George was abandoned on the 25th and that of PRADELLA the day following. On the 27th the garrison was summoned to surrender and a capitulation was arranged on the 30th. Thus the whole siege lasted less than one month and resistance ceased after fourteen days' bombardment.

Before evacuating the PRADELLA the besieged had endeavoured by cutting the dyke behind it to let down a flood of water from the upper lake into the PAJOLO marsh. This somehow did not come off at the time, but only two hours after the capitulation had been signed the dyke here gave way, and there was such a rush of water as to deepen this marsh considerably. The commandant of the fortress himself acknowledged that this would have enabled him to hold out another week. Now the capitulation set free 20,000 men to reinforce the Austrian field army, and these took part in the decisive victory of NOVI on the 15th August, so that this premature surrender had a disastrous effect on the whole campaign.

The strength of the garrison that surrendered was nearly 11,000, with 675 guns, a flotilla of 15 gunboats and a vast quantity of provisions. Among these were a thousand Poles, previously fallen as prisoners into the hands of the French and then enlisted in their service.

The contrast between the two sieges was continued in the conditions of the two capitulations. In the first the valiant WURMSER held out to his last morsel of food, and marched out with honour; in the second a premature surrender dishonoured a weak commander and compromised the fate of the field army.

MANTUA was again lost to Austria in the following year, without a siege, in consequence of the battle of the MINCIO and armistice of TREVISO, and was then included in Napoleon's Kingdom of Italy. It passed once more back to its old masters at the re-arrangement of Europe after the fall of Napoleon. The revolutionary forces in 1848 were not able to undertake the attack of such a fortress, only to watch it from a distance, but the village of CARTATONE, a few miles to the west, was the scene of an encounter between the Austrian and Tuscan troops on the 13th May and holds an honourable place on the roll of Italy's "*patrie battaglie*." In 1859 the tide of war stopped short at the MINCIO, and in 1866 after the peace MANTUA was finally evacuated by the Germans.

Situated in a low flat plain the country round MANTUA has much rice cultivation. The railway now runs into the town over the northern causeway, and issues by the PRADELLA gate, after which it skirts that portion of the land face that formed the object of the main attack in the second siege. The east branch to LEGNAGO crosses

the field of the battle of St. George and all the country traversed by the armies in the second and the fourth attempts at relief during the first siege. The north and south line is at present a link in the main chain of communication between Italy and Germany, but MANTUA lies off the routes usually taken by English tourists, who generally approach VENICE either from the south by way of FERRARA or from the west by way of VERONA, and is thus less known than it deserves to be from its historical associations.

MANTUA is now garrisoned by soldiers of her own race and language, and after having seen surging round her walls the strife of many strangers, French, Germans, Croats, Hungarians, Poles and Russians, has now enjoyed a free and peaceful life for forty years in the bosom of United Italy.

VI.

TAGLIAMENTO.

A visit to this field leads us beyond the limits of that ADIGE-MINCIO region which forms the scope of these notes, but, without a consideration of this campaign, the story of the foregoing ones would be incomplete.

Leaving VERONA by the eastern gate, an inscription beside it informs us that through it the national troops made their entry at the termination of the foreign occupation in 1866. The first village that we come to, S. MICHELE, was the scene of an encounter on the 12th January 1797, two days before the battle of RIVOLI, and here as well as at the next village, S. MARTINO, skirmishes occurred on the 11th November 1796, when the French were advancing to attack at CALDIERO in the campaign of ARCOLE. This CALDIERO position, nine miles from VERONA, was again the scene of an engagement on January 6th, 1801, and of a fierce battle on October 30th—31st, 1805, when 40,000 French under MASSENA attacked 80,000 Austrians here entrenched. On the second day MASSENA turned the enemy's left: the losses amounted to 6,000 on each side and the French took 2,000 prisoners. In 1809 it was the furthest point reached by the Archduke John in his invasion of Italy, and in 1813 it was once more seized by the Austrians under HILLER.

The whole of this country in fact has been fought over so often that to note all its military incidents would be tedious. Between twelve and thirteen miles from VERONA we pass S. BONIFACIO, BONAPARTE's objective on the Austrian line of retreat, in his move which led to the battle of ARCOLE, and about six miles further on near MONTEBELLO, on the left of the road, happened a conflict between the Italian Volunteers and the Austrian troops on April 8th, 1848. This was also the scene of an engagement on the 7th January 1801 during the retreat of the Austrians after the battle of the MINCIO. Approaching VICENZA we cross the ground over which the Austrians from VERONA on the 24th May 1848 unsuccessfully attacked this town defended by the Roman army under the Piedmontese general DURANDO. An attack by the same troops from the opposite side

had been repulsed by the Volunteers on the 20th. CARMIGNANO just west of the BRENTA was the scene of MASSENA'S success on the 6th November 1796 at the opening of the campaign of ARCOLE.

TREVISO, the junction of several roads and railways, is an important point and became a centre of operations in 1848. It was in this campaign the objective of a movement so quickly carried out as to deserve a passing notice.

The Roman army had crossed the Po and occupied OSTIGLA.* On the 25th April General DURANDO received here an order to move his force to TREVISO. The 26th was taken up in collecting boats and barges in which most of the infantry were conveyed next day down the Po to POLESSELLA, 44 miles, whence they marched to ROVIGO, miles. As there was only one steamer to tow, the journey had to be made in two trips. On the 28th they moved to MONSELICE 13 miles by road and on to PADUA 15 miles by road and canal, in carriages and boats, and thence by rail *viâ* MESTRE to TREVISO 31 miles—total 111 miles. Meanwhile the cavalry and artillery, five squadrons and sixteen guns, and four battalions of infantry had marched by road *viâ* ROVIGO, 103 miles, the direct way being blocked by the Austrian fortress of LEGNAGO.

Thus on the third day from the receipt of the order, a Division of all arms of 7,000 men had been moved, with but little help from railways, a distance of over a hundred miles. The army of a small Italian State is not one from which we should expect an example in mobility, but it must be acknowledged that on this occasion the soldiers of modern ROME showed themselves not unworthy of Julius Cæsar.

Beyond this at the river PIAVE, EUGENE, NAPOLEON'S stepson, defeated the Archduke John in his retreat on the 8th May 1809, the casualties on both sides amounting to 10,000, and between SACILE and PORDENONE the latter defeated the former on 16th April in the same year during the Archduke's advance. This brings us to the sphere of the operations of 1797 with which we are specially concerned.

After the battle of RIVOLI in January 1797, the French army was in possession of the whole line of the BRENTA from its source in the TYROL to the ADRIATIC, with advanced posts pushed towards the PIAVE, the next river eastward. The fortress of MANTUA had capitulated after a siege of eight months on the 2nd February, and BONAPARTE after having been obliged to remain on the defensive for several months was now about to show his brilliant talents in a vigorous offensive. By reinforcements drawn from the RHINE, his field forces were increased to 60,000. Of these, the main body under his own command in the plains of north-east Italy exceeded 40,000, consisting of the Division of MASSENA, GUYEUX (formerly AUGEREAU who had gone to France), SERRURIER and BERNADOTTE (newly arrived from Germany); the left wing under JOUBERT in the TYROL was

* Where the main south road from VERONA crosses the Po.

a little under 20,000, including his own Division and those of BARAGUAY D'HILLIERS and DELMAS.

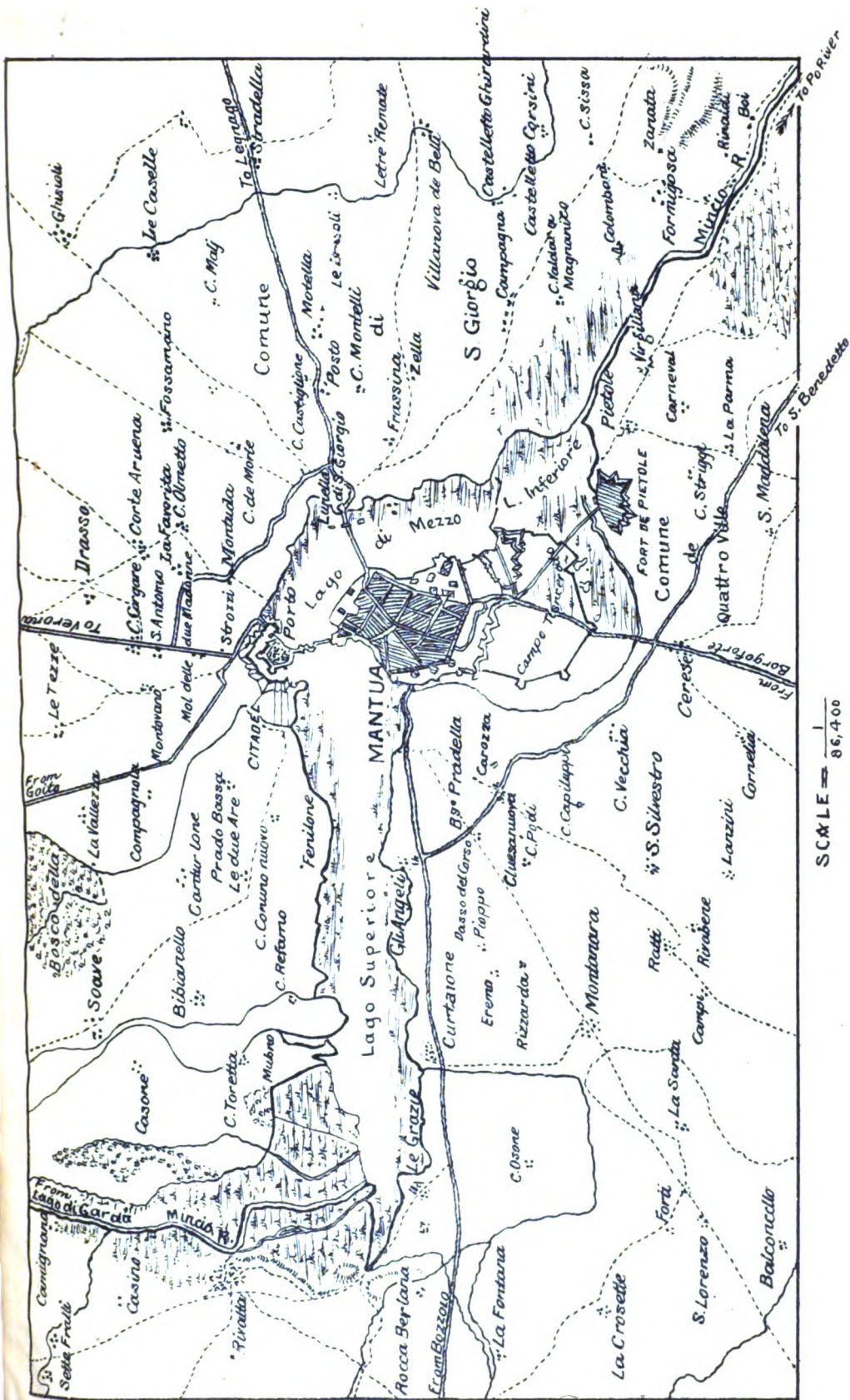
The Austrian army was of about the same strength, counting the Divisions on their way from Germany which could not come into line before April; without these, only 35,000. It held the line of the TAGLIAMENTO with outposts on the PIAVE, the next river westward. It was under the command of the Archduke Charles who was even younger than NAPOLEON, and who had gained great renown from his successful conduct of the previous year's campaign in Germany.

These two young commanders were now to be pitted against one another, one who had risen from the people by his native genius, the other the descendent of the German Cæsars, the proudest monarchs in Europe, and both flushed with recent victory. These circumstances give a high and romantic interest to the campaign of 1797.

The French troops began their forward movement on the 10th March and drove in the enemy's outposts on the PIAVE. One Division, MASSENA'S, was to skirt the hills and continually threaten the enemy's right flank, while the remaining three moved over the plains. With these three BONAPARTE attacked the Archduke on the 16th on the TAGLIAMENTO. This river which flows from north to south, on issuing from the mountains, spreads out into several channels, occupying a broad and shallow bed: it forms thus an indifferent line of defence, and at this season, before the melting of the Alpine snows, was fordable anywhere. The Austrians offered a feeble resistance and withdrew from the field with a loss of only 500 men and six guns.

This battle is famous for the steady precision and parade-like advance of the attacking army. The French went into action in line, each brigade having a small column on either flank, the front covered by skirmishers. These small columns could form square very quickly, so that with a large front of fire was combined a ready means of resisting cavalry, in which arm the Austrian army has generally been strong. This formation is not unlike that of the British army at the battle of the ALMA more than half a century later, but the ground at the TAGLIAMENTO was more open, and our army deployed wholly in line was in a less favourable formation for manœuvring than the French in a combination of line and column, and our difficulties were enhanced by the enclosed nature of the country on the right bank of the ALMA.

The importance of this battle is not to be measured by the smallness of its "butcher's bill." It was the first conflict between the two young but already renowned commanders of two great nations, representing two opposite principles, the new democracy and the old monarchy, each the hope of his country, and by the result of this first conflict the French gained all the moral advantages of a first success; and this battle proved a forecast of the whole campaign which was marked throughout by a bold and rapid advance on one side and by a precipitate retreat on the other. Only three days



later the French carried GRADISCA and crossed the ISONZO the last river of Italy, taking two thousand prisoners and ten guns.

There are two main routes that lead from North-East Italy over the Alps into the valley of the DRAVE; one up the valley of the TAGLIAMENTO and its affluent the FELLA, the other up the ISONZO and its affluent the CORITENZA. These two routes join on the north side of the mountains at TARVIS on the GAILITZ, an affluent of the DRAVE. Both are blocked at narrow parts of their valleys, on the south side, by forts similar to the Fort CHIUSA—which is the Italian for “shut”—on the VERONA-TRENT road, and known respectively as the CHIUSA VENETA and the CHIUSA DI PLEZZO. These forts were held by Austrian garrisons.

MASSENA'S Division, which had been away to the left at SPILIMBERGO at the time of the action on the TAGLIAMENTO, took the first of these two routes, GUYEUX'S and SERRURIER'S the second, while BERNADOTTE alone continued eastward by the southern route on LAIBACH, and the cavalry took possession of TRIESTE.

The CHIUSA forts could not stop the impetuous torrent of the French advance. MASSENA reached TARVIS after a sharp fight on the 22nd and thus gained the exit of the second road: an Austrian column escorting the trains of the army along this road being thus enclosed was obliged to capitulate at RAIBL on the north slope of the mountains with 3,500 men, twenty-five guns and four hundred carts. Three French Divisions reached VILLACH on the DRAVE on the 28th. This, the strategic point of CARINTHIA where all the main lines of communication meet, was thus secured in eighteen days from the opening of the campaign. The French had passed through a tongue of South Slavonic country and were now approaching the confines of Germany.

While the centre and right wing of the army had been making this rapid progress in Italy and CARINTHIA, the left wing under JOUBERT had been no less active in the TYROL against the two Austrian Divisions of LAUDON and KERPEN who, at the outset of the campaign, were in position north of TRENT, one on each side of the river ADIGE.

The French did not move on this line until the 20th March, and by the 24th they had reached BRIXEN at the foot of the BRENNER pass, having covered sixty miles in five days and fought four actions, one of which was on the LAVIS and not far from the scene of BONAPARTE'S victory of the 5th September previous. Their position here, however, was far from secure, far advanced as they were in the mountains of the TYROL, with their troops divided in the valleys of the ADIGE, the EISACH and the ISARGO, ignorant of the success of the centre and right, and threatened on all sides by the *levée en masse* of this province, whose population was firmly attached to the House of Austria.

At this critical juncture, a French colonel named EBERLE, by assuming the disguise of a peasant, succeeded in penetrating alone into the valley of the DRAVE and of bringing back news of BONAPARTE'S

progress on that side. JOUBERT now took one of those bold resolutions that mark a great character. He concentrated his whole force at BRIXEN on the 5th April, and leaving the TYROL to KERFEN'S shattered forces and LAUDON'S raw levies crossed the TOLBACH pass, and descending the valley of the DRAVE joined BONAPARTE'S route at VILLACH, a hundred and forty miles from BRIXEN.

The French army was now far beyond the limits of Italy, and concentrated on the high road to the Austrian capital. By the time JOUBERT reached VILLACH, the right and centre had pushed far ahead and had crowned the STYRIAN Alps from which on a clear day could be descried the spires of VIENNA. The Imperial family including the Archduchess Marie Louise, NAPOLEON'S future Empress, then a child of six, fled from the capital, an armistice was arranged and on the 17th April the preliminary articles of peace were signed at LEOBEN.

This consummation was cleverly brought about by BONAPARTE at a time when things were not going well in North Italy in rear of the army. The Austrian light troops had recovered TRIESTE and were pushing on to the ISONZO. LAUDON with the Tyrolese had, after the departure of JOUBERT, penetrated down the ADIGE valley and was debouching on to the plains between that river and the MINCIO, the theatre of BONAPARTE'S brilliant achievements in 1796. The Republic of VENICE had collected some troops and assumed a hostile attitude, not without reason. Democratic outbreaks, fostered by the French, had occurred in various towns of the Venetian mainland, some of which had even shown an inclination to join the Cis-alpine Republic recently founded by BONAPARTE in Lombardy. The feeling of the Venetians ran high against the French.

On the 17th April, the same day that the preliminaries of peace were signed at LEOBEN, a serious anti-French outbreak happened at VERONA, where the French garrison was only strong enough to hold the castles. Many Frenchmen scattered through the town fell victims to the popular fury and the sick in hospital even were not always spared. The artillery from the forts fired on the town and the forts in their turn were besieged by the insurgents. The Venetian Senate sent two thousand Slavonians to VERONA and an armed conflict occurred a little outside the walls between these and the insurgents on one side and a French column which had come up under KILMAINE on the other. This outbreak which has received the name of the "Veronese Easter" gave BONAPARTE a plausible ground for making war on Venice and thus possessing himself of what he had already secretly decided was to be handed over to Austria as a compensation for her losses elsewhere, in order to patch up a peace.

The peace preliminaries had necessitated the retirement of the Austrian forces within their own border, and had left the Republic alone to face the anger of the French. A new Division under VICTOR had entered VENETIA from south of the Po, and now the main army returned from CARINTHIA and occupied cantonments in North Italy.

The French forces overran the whole Venetian mainland up to the shores of the Lagunes.

The spirit of this ancient and aristocratic Republic, which had in past times resisted BARBAROSSA, conquered CONSTANTINOPLE, held firm against the League of CAMBRAI and served for centuries as a bulwark of Christendom against the Turks, was exhausted: the democratic party in the city favoured French intervention: no resistance was offered, and after some futile negotiations, on the 16th May 1797, the French troops entered VENICE which had never before known a foreign occupation, and her glorious career of thirteen centuries came to an ignoble end.

It was not till six months after this, on the 17th October, that the final treaty of peace was signed at *Campo Formio*. Two great states, France and Austria, found means of arranging their differences at the expense of a third and weak state. Shortly the settlement consisted in France acquiring the Austrian Netherlands (approximately Belgium), the whole left bank of the RHINE, SAVOY and NICE, and the Ionian Islands (hitherto Venetian), Austria receiving the rest of the Venetian possessions east of the ADRIATIC, VENICE herself and her mainland in Italy as far as the ADIGE. Her possessions beyond the ADIGE as well as those of Austria in Lombardy, MODENA and the ROMAGNA were formed into a new state called the 'CIS-ALPINE Republic' under French protection.

France, thus expanded to the dimensions of ancient Gaul, acquired what had been the object of her ambition for generations, while Austria relinquished a detached province with a seaboard on the far away north sea for a territory contiguous to her hereditary states, and which could be included within the ring fence of her Empire, with a more congenial seaboard on the ADRIATIC.

CAMPO-FORMIO (or *Campoformido*) which gave its name to this settlement is a village not far from the battlefield of TAGLIAMENTO between that river and UDINE, and near the station of PASIAN SCHIAVONESCA whose name reminds us that we are approaching a SLAVONIC country. The railway crosses the TAGLIAMENTO by an iron bridge half a mile long and marks approximately the position of the right of the French army at the battle. Beyond UDINE the line returns to the TAGLIAMENTO at GEMONA and follows thence up its valley and that of the FELLA by the same route that MASSENA's Division marched up. The CHIUSA has its station "*Chiusaforte*" and the Italian frontier at PONTEBBA is about ten miles short of the water parting ridge. This is the main line leading from Italy to VIENNA. At VILLACH it is joined by an east-and-west line which comes from BRIXEN, past the fortress of FRANZENFESTE over the TOLBACH and down the DRAVE valley, exactly the route followed by the left wing of the French army in 1797.

From UDINE branches off eastward another railway to GORIZIA, TRIESTE and Hungary, which may ere long form part of an overland route to India by the SIMPLON and CONSTANTINOPLE. The more easterly road over the NORIC Alps, that taken by GUYEUX and SERRURIER

up the ISONZO and the CORITENZA has no railway but a good road. This route lies now wholly in Austrian territory. The political frontier which leaves the mountain crest near PONTEBBA is carried on by an irregular line to the sea passing west of the ISONZO. The space thus cut off between the Alps and the ADRIATIC forms a portion of that "unredeemed Italy" which the ardent patriots of the peninsula consider wanting to round off the natural boundaries of their country.

The campaigns of 1796-97 will ever be reckoned among the most remarkable in history. Not their least important, albeit a somewhat sad feature, was the extinction of the oldest state in Europe, a state which carries us back to the invasion of the Huns. ATTILA, the scourge of Rome, was the indirect cause of the foundation of VENICE, and VENICE found her own ATTILA in Napoleon.

As long as the Austrian connexion with Italy depended on the slender line of the ADIGE valley, her influence could not be very powerful, but by putting her in possession of the Venetian mainland Napoleon inaugurated on a solid basis that German dominion in Italy which it was reserved for another Napoleon to overthrow, and Austria, although later on dispossessed, did not fail in 1815 to substantiate her claim.

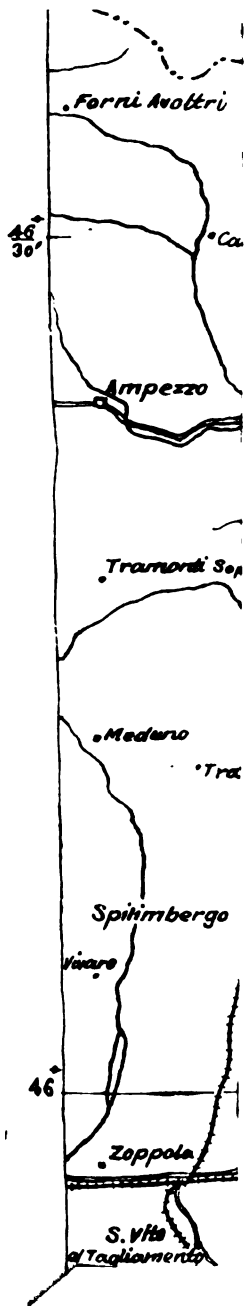
On the other hand, by the creation in the CIS-ALPINE Republic of a national state on a democratic foundation, Napoleon aroused the patriotic feelings of the Italians, and sowed the germ of that "risorgimento" which was in the next century to lead to the formation of the constitutional kingdom of Italy one and independent.

THE RELATIVE VALUE OF MUSKETRY IN MILITARY TRAINING.

BY CAPTAIN H. L. BALDWIN, 8TH GURKHA RIFLES.

The majority of people interested in military efficiency are firmly convinced that as far as the individual soldier is concerned the first, foremost, and most essential requirement is good shooting. It has been repeated times beyond number in speeches and in print that unless a soldier can shoot straight he is to all intents as useless for fighting purposes as the humblest of camp followers. To the uninitiated it may be as well to explain that only marksmen and first class shots are looked upon in our army as meriting being classed as straight shooters. Second class shots are considered very moderate, and third class shots entirely useless from a shooting point of view. It must not be supposed that a third class shot is anything like the proverbial individual who cannot hit a haystack at 50 yards. On the contrary, the average third class shot can generally shoot with sufficient accuracy to secure at least 75 per cent of hits on a target two feet square at 200 yards, or four feet square at 500 yards. As the percentage of third class shots in most regiments is extremely small it may be inferred that the standard of shooting in the army is a fairly high one. Compared with the armies of the great Powers, including Japan, this is certainly the case. Japanese musketry instruction is positively puerile compared to ours, and that our army has a marked superiority as regards accuracy of shooting in target practice over any continental army is by no means an extravagant assumption to make. It would be surprising if it were not so, considering we spend very much more time over musketry training than is the case with foreign armies. If this is the case, and if marksmanship is so all important as it is asserted to be, it might naturally be concluded that our army, both British and Indian, is vastly superior in the most essential quality of trained soldiers, *viz.*, "straight shooting." Curiously enough the confidence that this fact should inspire us with seems to be singularly lacking, judging by the many lucubrations we are treated to, in the press and on the platform, anent the state of the army. In the Boer War we heard a good deal about indifferent shooting, and one of the chief lessons said to have been learnt was that the army required a more practical system in musketry training. This remedy was immediately applied, and, as far as one can judge, the authorities concerned have given the army as sound and practical a course of musketry instruction as peace training can possibly afford. Notwithstanding this, signs are not wanting that what may be called the extreme view regarding musketry is undergoing some modification, and that its supreme importance, though still loudly asserted, is not by any means universally acknowledged.

Some indirect evidence of this is perhaps afforded by the book lately published by Sir Ian Hamilton on the War in Manchuria. The writer like most military critics has a very high opinion of the military qualities of the Japanese, and believes them to be second to none except the British soldier at his best. He mentions amongst other things that he was constantly on the look out for some method or manner of carrying out a military operation which he could honestly assert would have been better done by our men. Eventually the incident in which he considered the British soldiers would have shown more enterprise was in attacking the enemy over open ground. One might have expected that there were many occasions when the superior marksmanship of British infantry would have been quoted as likely to have produced greater results than were produced by the Japanese under similar conditions. Either there were no such occasions, which is extremely unlikely, or else the general character of musketry fire was such as to make it impossible to determine whether the resulting casualties were due to accurate shooting, or merely to the natural consequence of exposure to a greater or less degree of intensity and volume of fire. In the latter case it would of course be impossible for a critic to assert confidently that British troops would have done better, even assuming their marksmanship to be superior. It would be rash to draw any conclusions merely because a military writer, however competent, cannot or does not produce some convincing testimony regarding what is generally considered the most important branch of military training. There may be and doubtless are excellent reasons for it. The fact is simply mentioned because it leads up to an argument which we will proceed to amplify, and the truth of which, if admitted, will be seen to have a very important bearing not only on the particular branch of military training affected but on Army Reform generally. In brief, then, the point we would urge is that the cultivation of a very high standard of musketry, far from being the first and most essential requirement of the soldier, does not even rank as second or third among the most essential qualifications. More than this it is to a certain extent positively harmful. The latter assertion seems at first sight absurd. Even supposing high class shooting were not so important as generally imagined, how can it possibly do any harm to be a marksman or first class shot? The answer is "none whatever," but the question does not happen to be whether marksmanship is a good thing or not. The question is, assuming that a very high standard of musketry is of minor importance, does it do good or harm to cultivate it to an extent which is altogether out of proportion to its importance? Before answering this question let us consider for a moment what qualities military training aims at teaching or developing in the soldier. Briefly stated they are as follows:—Courage, discipline, physique, drill, tactical training, musketry, organisation, and miscellaneous duties connected with interior economy, encampments, transport, etc. Obviously the most scientific and therefore the best form of military training is that which, without





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opportunity of cleaning the bore, thus causing inaccurate shooting.

(b) The range usually only roughly known, and often unknown.

thus insuring the maximum of accuracy as far as the rifle itself is concerned.

(b) Range known accurately, or within 50 yards of true range.

neglecting any, will devote to each subject in which the soldier requires instruction the amount of attention which is as nearly as possible in proportion to its importance in the general make up of an efficient soldier. Starting with these premises there can be no doubt that, provided high class shooting can be shown to be a matter of comparatively minor importance, a vast amount of energy at present devoted to acquire superior excellence in musketry is expended in the wrong direction, is detrimental to general efficiency, and is harmful in many ways which will be detailed later on.

It now becomes necessary to enter into some detail regarding the reasons for supposing that high class shooting is a matter of minor importance. By high class shooting is meant the degree of individual accuracy which the present Musketry Regulations aim at developing in order to produce marksmen and first class shots.

Every one is of course aware that the conditions under which the soldier fires in peace time on the range, or at so-called field practices off the range, differ from the actual conditions in war time to an enormous extent. The difference is, however, generally looked upon as being merely a difference in degree, that is to say, although opinion may be unanimous that fire effect on actual field service as measured by hits will be much smaller than in field practices, the relative value of marksmen, first, second, and third class shots will, it is thought, remain the same. For example, assuming a marksman would make at a certain field practice 20 hits and a second class shot 10 hits, in war time under similar conditions the former would make say 10 hits and the latter 5 hits. If this were all, the actual value of accurate individual shooting in the field would of course be less than indicated by field practices, but the relative value of good and indifferent shots would remain the same, and the case for insisting on a high standard of musketry would still hold good. In point of fact, however, the difference is not only a difference in degree but a difference in kind. It is the latter circumstance which, though apparently scarcely appreciated, puts an entirely different complexion on the whole matter. In order to see this clearly it will be necessary to compare under two parallel headings the conditions of shooting in war-time with those which prevail in peace-time for the purpose of classifying shots as marksmen etc.

War Conditions.

- (a) The rifle constantly exposed to slight temporary injuries, and to fouling caused by a large number of rounds being fired without an opportunity of cleaning the bore, thus causing inaccurate shooting.
- (b) The range usually only roughly known, and often unknown.

Peace Conditions.

- (a) The rifle always clean and in good order. Only a few rounds are fired at a time without the bore being thoroughly cleaned and wiped out, thus insuring the maximum of accuracy as far as the rifle itself is concerned.
- (b) Range known accurately, or within 50 yards of true range.

War Conditions.

(c) The natural target (the enemy) more often merely indicated rather than actually seen. Even at close ranges difficult to distinguish individually, and constantly changing position.

(d) The noise, excitement, nervous tension, physical fatigue and exhaustion on the battlefield, not to mention the fact that the firer is under fire himself, all contribute to disturb the aim and destroy accurate shooting.

Peace Conditions.

(c) The artificial target even when small is fairly conspicuous, does not change its position. In some practices where vanishing or moving targets are employed they can only very inadequately represent the elusiveness of the real human target.

(d) There are practically no disturbing influences, and nothing to destroy the firer's accuracy of aim, except in some cases a certain amount of physical strain.

Broadly speaking the essential difference is that fire effect in war-time is produced by concentrating a stream of bullets with *approximate* accuracy over a particular area in the enemy's line, while in peace practices, though the fire may be what is called collective, each individual selects and concentrates all his attention on hitting a particular and distinctive mark. Under peace conditions marksmanship is everything and fire discipline of comparatively slight importance, whereas under war conditions marksmanship is either impossible or impracticable while fire discipline counts for much. The obvious inference is that in war-time except under very rare and exceptional circumstances there is practically no difference between a marksman and a third class shot as far as fire effect is concerned. Many will be disposed to doubt this simply because it is not the orthodox idea, and because they fail to grasp the essential difference between shooting under peace and under war conditions.

If we examine the conditions of war and peace respectively under the parallel headings above enumerated, we find that whether taken singly or collectively the conditions of war render marksmanship not only more difficult but practically impossible. Fouling of the rifle may perhaps only cause slight inaccuracy; ignorance of the true range causes more or less considerable inaccuracy; an elusive, indistinct, and indefinite target precludes any attempt at making the minute, defined, concentrated, and steady aim which distinguishes the marksman from the third class shot; and, lastly, the bodily and mental condition of the firer on a modern battlefield must necessarily affect that clearness of vision and complete steadiness of hand, eye, and arm without which anything like accurate shooting is absolutely impossible. The last point, which includes what may be described as the physiological conditions of civilised warfare, though generally taken less into consideration than any other, is perhaps the most important of all. It is quite certain that physical and mental strain or excitement of any kind causes blurred vision and involuntary vibration of the muscles though the individual may be perfectly cool and collected in other respects, and it is equally certain that, when in

this condition, the otherwise brilliant marksman is not one whit superior to the average third class shot in fire effect. In order to appreciate this fully let us consider what the difference between a good shot and a moderate shot really consists in. When firing on a range we can safely assume that they are both thoroughly acquainted with their rifles, that the sighting is accurate, that both entirely understand the principles of good aiming and firing, and that both fire with equal steadiness. Why then with all these conditions similar does a good shot make a better score than a moderate shot? Simply because the image reflected on the retina of the eye in the case of the former is slightly clearer and better defined than in the case of the latter, thus enabling the good shot to take a clearer and more minute aim than the moderate shot. Practice of course improves shooting, but only in so far as the various nerves and muscles which control the hand, eye, arm, and breathing, *i.e.*, the principal requisites of accurate shooting, are by practice taught to act automatically with greater precision and combination. To this limited extent practice is valuable, but it can no more transform the natural condition of each man's organ of vision than a short-sighted man can be transformed into a longsighted one by practising to read at a distance.

If the truth of this is admitted it follows that rifle shooting, from its nature, requires less practice than most accomplishments in order to attain tolerable proficiency in it. Take, for instance, outdoor sports such as polo, cricket, or golf. These latter necessitate a far greater combination of faculties to be brought into operation, and therefore require, as might be expected, considerably more practice in order to obtain a certain level of proficiency. Putting aside the question of practice, however, the point we have to bear in mind is that the difference between a good and moderate shot is in point of fact extremely small, and is ultimately dependent on a slightly greater or less aptitude in the most delicate and sensitive of human organs, *i.e.*, the organ of sight.

Fatigue, hunger, excitement, nervous tension of any kind, in fact nearly every one of the conditions which are normally present when two hostile forces are striving to overthrow one another, completely destroy for the time being that delicacy of vision which is absolutely essential for accuracy in shooting.

It is not difficult to understand how the popular idea of the efficacy of marksmanship as the decisive factor in modern warfare is so deeply rooted. Victories are won by inflicting loss on the opposing force. The greater portion of such losses are due to rifle fire. The obvious deduction is that rifle fire is the most important element in securing the defeat of an enemy. Up to this point the reasoning is based on facts that are patent and universally admitted. Popular opinion, however, goes beyond this point, and maintains that marksmanship, which is in a sense the highest form of rifle fire, must necessarily produce the greatest fire effect, and therefore marksmanship should be the first, foremost, and most important aim in the

soldier's training. This theory is entirely based on the results of target practice in peace training, but as we have endeavoured to show above the effect of fire in peace training affords absolutely no criterion of its effect in war, the conditions being radically different.

Superiority of fire in war is gained not by superior marksmanship but by greater volume and concentration of fire. Describing the attack formation that should be adopted by infantry at decisive ranges, "Infantry Training" lays down that, in order to obtain the maximum of fire effect and thus establish a superiority of fire, the firing line should contain as many men as can use their rifles effectively. In other words, to break down the enemy's fire the essential thing required is to pour a continuous hail of lead over a given area, a task which second and even third class shots could perform just as effectively as marksmen.

A further illustration of this fact is conspicuously afforded by the high value attached to the maxim in our army and to a great though lesser extent in most continental armies.

The maxim has no greater range and no greater accuracy than the rifle. It is expensive, lacks mobility, requires special training, takes officers and men from the effective strength of the battalion, is conspicuous, draws artillery fire, is difficult to conceal and thus often hampers manœuvring, and with its train of mules swells the transport and number of ineffectives. With all these great and distinct drawbacks it is considered indispensable because it can pump lead over a given area with greater intensity and volume than any other existing fire arm.

If then battles are won by superiority of fire in this sense, it follows that to secure such superiority, courage, discipline, mobility and good tactics are of infinitely greater importance to an army than marksmanship, and there is much in the history of both former and recent campaigns to bear out this contention.

In an article on the influence of armament in warfare which appeared recently in the *Journal of the U. S. Institution of India*, the writer points out how in almost every campaign of modern times popular opinion has attributed the success of the victorious side to superior armament, whereas on analysis the real superiority is shown to have consisted in superior training and tactics. Similarly in the late Boer War public opinion constantly attributed the successes of the Boers to their superior marksmanship. As a matter of fact no proof of this alleged superior marksmanship has as yet been established, but even if it were, the recognised authorities on the subjects are agreed that the true cause of their success on several occasions was due to their immensely superior mobility, the excellence of their intrenching and use of cover, and to their thorough knowledge of the country and the tactics most suitable to the nature of the ground.

In the late Russo-Japanese War there is absolutely nothing to show that marksmanship as such had anything to do with victory or defeat on either side. The Russians possessed a large number of

regiments styled "sharp-shooters," but there is not the slightest evidence that they ever achieved results which justified the title, or distinguished them in any way from other regiments as regards shooting capacity. If we go back to the campaigns of Napoleon and Frederick the Great we still find no evidence of marksmanship having been a decisive factor in any battle, though this may perhaps be considered irrelevant, owing to the extremely limited range and precision of fire arms in those days. The fact remains, however, that there is no real evidence, in spite of popular opinion to the contrary, that marksmanship has produced decisive or even important results in any modern campaign since fire arms were first invented, always bearing in mind that a large percentage of casualties such as took place, for instance, at Gravelotte, Omdurman, Maggersfontein, and Port Arthur, are in themselves no proof of superior marksmanship, but merely the natural consequence of troops becoming temporarily exposed to a fire swept zone.

Thus far we have endeavoured to give good reasons for holding that marksmanship is of comparatively small value, and to show how the general misconception regarding the principles which govern effective fire in the field has given rise to an entirely fictitious value being placed on musketry training as developed on the range and in so-called field practices.

There now only remains to indicate briefly what results might be achieved if the truth of this contention were admitted and acted upon.

In the first place it is clear that if extreme accuracy in range shooting is of little practical value under war condition, an enormous economy might be effected by reducing the annual allotment of ball ammunition by say 50 rounds per man. It would mean a saving of not only the actual cost of the rounds which is considerable in itself, but in addition we have to consider the fact that large sums expended in carriage of ammunition would be saved, the cost of stationery involved in countless returns and correspondence would be reduced, and last but not least the life of each individual rifle would be increased by three or four years. The total saving, taking into consideration the increased life of the rifle, would probably amount to little less than £500,000 a year.

As on our hypothesis this enormous economy could be effected without decreasing the efficiency of the soldier in the slightest degree, it is hardly necessary to dwell on the immense benefit that would accrue on this score alone.

Apart from this, musketry according to our contention is seen in an entirely wrong perspective when viewed beside all other subjects of military training. Instead of merely forming a prominent part of the picture, it at present fills the entire foreground, and dominates the whole. The result is not only detrimental to the efficiency of the individual soldier, but exercises a malign influence on the whole conception of Army Reform. Without attempting to go into details regarding the complexities of the latter subject, let us

glance at one feature of it to illustrate our meaning, namely, the military value of the volunteer as a defence against invasion. It is safe to say that nine-tenths of the British public firmly believe that a volunteer who can shoot well and knows his drill is just as useful a military unit as the regular soldier. The conclusion is only natural as long as people entertain the notion that good shooting is the most essential and almost the only requisite of a trained soldier. Facts, however, completely disprove this theory, and it is easy to see why. The volunteer, no matter how well he can drill and shoot, lacks the discipline and cohesion of a properly organised unit like the regular soldier. For want of these essential qualities even the best class of volunteer is inferior to the regular, while an inferior class of volunteer is often not only useless but a positive danger to an organised force. Although the truth of this has been frequently illustrated in military history, one of the most prominent instances being the fate of Bourbaki's levies in 1871, there is not the slightest sign that the majority of the public even dimly realises the danger of placing too much reliance on a volunteer army, while the public press babbles glibly about staving off conscription, and imagines the country need fear no foe as long as every clerk and public school boy can hit the bull's-eye at 500 yards.

The wider aspects of the question, however, hardly come within the scope of our main contention which aims at demonstrating that the present excessive cult of musketry is detrimental to the efficiency of the soldier and to military training in general. To see how this may be the case let us recapitulate the chief qualities required in an ideally efficient soldier. They may be stated to be as follows—courage, discipline, physique, drill, tactical training, and musketry. Every one will admit that these are the principal requirements, though opinions may differ widely as to whether they are placed in the proper order of their relative importance. We have, however, already given reasons for the view that musketry should be placed last among the above-mentioned qualifications, and the exact order of precedence among the remaining qualifications does not affect the argument.

Let us take the qualities as mentioned in the above order, and examine how they can be developed by military training.

First of all, courage. This is to a certain extent an inherent quality, but it can be enormously developed for military purposes by cultivating patriotism, "esprit de corps," and all qualities which affect what is called "morale." Participation in out-door sports and pastimes is perhaps one of the most important among many factors in this connection.

There is probably a considerable element of truth in the otherwise fantastic saying that Waterloo was won on the playing grounds of Eton. Even what may seem the trifling matter of a smart uniform is of no inconsiderable value, for the simple reason that it contributes towards that self-respect in the soldier without which no true "morale" can exist.

Regarding discipline it is unnecessary to say more than that it stands in the same relation to the fabric of any military system as mortar does to the bricks in a wall. It is therefore of the highest importance to cultivate all military qualities which promote discipline. Strict observance and carrying out of orders is of course the principal requirement, but there are many indications of lax discipline which could hardly be characterised as disobedience of orders, but which have a very detrimental effect on troops even though the harm done does not take the extreme form of insubordination or mutiny. Such indications are carelessness in general turn-out, slackness in drill and handling of arms, and want of smartness in the performance of minor duties. These faults may often be due to too much time being occupied with musketry and field days to the neglect of kit inspections and that training in precision of movements and handling of arms which those who fail to see its underlying motive and importance contemptuously describe as barrack square drill.

Physique is the next quality to be considered. In modern, just as much as in ancient, campaigns the stamina and physical endurance of the soldier is of paramount importance. Without these essential qualities, no matter how expert in other respects, he rapidly becomes non-effective, fills the hospitals, and becomes a drag and encumbrance to the army. To insure the minimum of waste in this respect in any campaign that may arise wholesome food and sanitary conditions are the first essentials, while physical training, route-marching, and all out-door forms of sport are hardly less necessary if we aim at obtaining an active and mobile army. While sanitary conditions are fairly well attended to, except as regards choice of stations with a debilitating climate and the prevention of certain diseases, it is certainly open to question whether physical training receives anything like the attention which its importance demands.

The next subjects of importance are drill and tactical training. In our army there is a tendency to practice the former to a minimum extent, in order to obtain more time for field days which of course provide tactical training while at the same time they embody the drill movements of a company, battalion, etc. If military training bears any analogy to other systems of training, it appears *prima facie* more probable that good results would be obtained by practising and training proficiency in each portion and branch of it before attempting it as a whole. As drill forms a part of the military training which is more completely epitomised by a field day, it does not seem clear why the same reasoning should not be applied to it as much as to a part of any other system of training, especially as in the case of a field day, the value of its tactical instruction often almost entirely depends on the soundness of judgment of the officer superintending the operations, which is by no means invariably an infallible guarantee.

Musketry which comes last in this list of qualifications is of course indispensable up to a certain point; but, for reasons given

already, we hold that ample proficiency in this subject could be secured by limiting the annual expenditure of the infantry soldier to 100 rounds per man, and by slightly modifying the present annual course, which could be brought about by either omitting some of the practices, or by reducing the number of rounds allowed for them.

The above short summary of the principal requirements of military training may serve to emphasise the fact that there is ample scope for improvement in subjects of the first importance, but this improved training cannot be applied without sacrificing some of the inordinate expenditure of time devoted to musketry.

That this sacrifice, by reducing expenditure of ammunition, would result in enormous economy is certain, and that it would at the same time result in gain rather than loss to military efficiency we hold to be no less certain, though the latter conclusion is based on an estimate of the relative value of musketry training, which at present is perhaps only shared by an insignificant minority.

"HOW TO ORGANISE AND MAINTAIN A GENERAL STAFF IN INDIA."

ESSAY ADJUDGED FIRST IN THE NORTHERN COMMAND ESSAY COMPETITION, 1905-06.

BY "QUIS CUSTODIET IPSOS CUSTODES" (MAJOR G. F. MACMUNN, R.F.A.)

After many years of opposition and refusal to realize facts, the Military Public have begun to understand what is meant by the expression 'General Staff', and to acquiesce in some degree in the formation of such a body.

It has been accepted that there must be some authoritative body that shall study the military needs of the nation, and be versed in the past history of our wars and requirements, and some definite authority to whom the country can turn for an opinion. In the past we have had a dozen conflicting opinions of titular experts on any moot point of National Military Policy, or on Military Organisation. Even on such a comparatively minor point as the future possibilities of cavalry, there is no definite opinion, and no permanent body whose dictum can be accepted as final, to the exclusion to the sensation-mongers and self-styled experts of the press.

That an army can be conducted on such lines, is an absurdity that has long been patent to every nation except ourselves. But even we, who in the past have bitterly opposed all reforms, and the formation of a professional army, have gradually come to wisdom.

In an army like the British, in which the old class privileges have died hard, the question of how to select the General Staff has always presented the greatest difficulties. The small body of soldiers that helped Lord Wolseley in his uphill task of reform, not being allowed to form a General Staff and a War School, were obliged to do the best they could with the Staff College. It was enacted that appointments on the Staff at Home and in the Colonies were only to be open, except in special cases, to graduates of that college.

In all armies except our own, it had been recognised that there are two staffs, performing two distinct duties, the Administrative and the War Staff. With our conflicting and often irreconcilable conditions of service, and the difficulties attending the upkeep of a worldwide army, the Administrative Staff had become the most important of the two, and had to tuck a small portion of the War Staff's work—the training of troops—on to their other complex duties. Whenever we went to war, the evil results of the starvation of the War Staff were very evident. Since the last big war with all its failures, an adequate War Staff has been created. At present, however, nothing definite has been done to secure that this General

Staff or War Staff shall have any permanency of thought, or become a body with only one opinion—carefully argued out within itself,—but presented to Government and the public, as one definite and conclusive result.

The necessity for making this Staff a permanent body, and for attracting to it all the able hardworking men in the service, has now been thoroughly realised, and we are on the eve of seeing some new and far-reaching arrangements to give effect to these views.

THE CADRE OF A GENERAL STAFF.

The actual divisions and allotment of duties to the General Staff have in England been clearly laid down in Appendices E and F. of Army Order 30 of 1905. A glance at the New Indian Army List for the 1st of April 1906, will show that the same principles of division have been accepted for India. It should be clearly understood that these are the duties that prepare an army for war, and prepare everything connected with the maintenance of an army in the field, with the exception that supply matters form a separate branch by themselves.

The question with which we are concerned is not the division of business; or what does the General Staff consist of: but how is it to be recruited and maintained.

Now there are two apparent methods of obtaining this General Staff, first by making the incumbents of certain appointments members of that staff with a certain amount of surplus members doing a turn of other work, with their units and with the Administrative Staff. Secondly, a wider and more statesmanlike scheme of creating a special caste "The Brain of the Army" (for the want of a better expression), from which caste the holders of General Staff appointments will be selected. The actual difference in the two systems will in many ways work out the same, save that while the former will tend to drive all the able men with wider experience and broad views out of the regiments, the latter will tend to raise the standard of training by distributing the General Staff men among them from time to time. It is a matter of common experience that a man who has some staff experience generally prepares a unit better for war than a man who has been with it all his service. He brings into it those higher ideas which realize that the unit is only useful as a co-operating part of a higher organisation, and of little value if a highly self-centred corps with little regard for the purpose of the service at large. The purely regimental officer is probably better in the personal influence over his men especially in an alien army like that of India, while he loses heavily at present through his want of knowledge or perhaps of realisation of the higher claims of war.

The object of the second method of creating the General Staff, is to mingle the two classes together, to give the regiments the advantage of the presence of the higher trained men, and to keep these latter to some extent in touch with the feelings of the

regimental officer without being dominated by them. Another important point is to let the keen soldier see that the career of advancement, which inclusion in the General Staff will offer, is not to be confined to any single clique.

Both of the methods of recruitment will give us the first desideratum, the permanent General Staff, while the second one will provide that placemen alone shall not profit, and that the net of the War Staff shall be a wide one, always on the look out for a good man, however his faculties have been developed.

In the army outside India, there are many men who have passed the Staff College, and the yearly output is, comparatively speaking, large. Thus there are a number of men available who have had the benefit of a training which endeavours to fit men to look at war from its wider aspect. Happily the old order is changing, and we are beginning to see that the man who has no theories of war in peace does not receive from above the inspirations of a Napoleon when face to face with the enemy. We are seeing, dimly perhaps, but with increasing clearness, that the preparation of the soldier is a very serious matter. Those who have tried, and they are happily many, to study war from the lessons of the past, realize how hard it is to find time for study. They see that two years spent under capable energetic teachers with every facility provided, gives an education that cannot be obtained elsewhere.

The Secretary of State's Minute to the Chief of the Staff at Home of November 1905, provides that, while the Staff College certificate will usually be essential for selection to the General Staff, it will not be indispensable. When the coming selection is made, there will be so many Staff College men available that it will not be necessary to go afield at Home, to actually fill the ranks, but only to get in such men who by nature, added to opportunity, have been able to attain the knowledge of war without the extra advantage of the two years at Camberly.

Now it should be noted clearly that it is not proposed that the Staff College certificate should of necessity carry selection for the General Staff. That institution weeds out from time to time any "stiffuns" that may have crept in, but there are many estimable men who pass through it, who do not shape for the War Staff of an Army. Some there are who show predilection and ability for administration, others while avoiding removal have not the energy to attain to a standard associated with either War or Administrative Staff. Some are released at the end of two years with minds given to pedantry and formalism, though the modern practical course has much minimised the possibility of this.

The minute referred to then, only states that as a rule the severe course of study and the energy which its undertaking usually indicates, are the best preparation that exists.

Now each year tends to bind the Home and Indian Armies together and to make them homogeneous in their training and principles, and it would seem desirable that the principle that underlies

the selection for the General Staff should be, so far as may be, the same, and indeed that those staffs should really be one, interchangeable if necessary, especially in the higher grades.

If we accept this principle, which in the writer's view we should do, and also accept the one detailed for the formation of the General Staff at Home, by the creation of a list of men considered of sufficient calibre for the position, we are presented with the following points:—

- (1) What shall be the Establishment of the General Staff.
- (2) How to select the first men.
- (3) How to maintain the list.
- (4) What terms to offer them.

(1)—THE ESTABLISHMENT.

Having accepted the Home principle of a caste that need not be all employed, it is evident that it is not necessary to fill up the numbers to any total as a commencement. The actual strength of the General Staff Cadre should eventually include enough men to fill every General Staff appointment, with a certain surplus. General Staff appointments are of two kinds, those at Headquarters, and those with the Army.

If we look at the Indian Army List for the first of April, we shall see the new organization at Headquarters. The General Staff, or as it is at present called, the Division of the Chief of the Staff, has two main sections, that of Operations and of Training. Operations deal with all the preparation of War Organisation, the collection of Intelligence and the preparation of Strategical Plans and Schemes. Training deals more with the leading of troops, and the training of officers and men for war.

All the officers of these branches will be appointed from the General Staff Cadre. Again, while there exist large divisions of the army such as the Commands, there must be officers of the Operation and Training Branches at these Headquarters as well as the various members of the Administrative Staff. On the Staffs of Divisions and Brigades there must be officers of the Training Branch, so that we may consider that the General Staff must be prepared to furnish men for these appointments as well. Until the final reorganisation and grouping of the army is settled, it is hard to say exactly how many are required, but the information is not necessary for the purpose of this essay. It is sufficient to point out that the Establishment will include all officers of the army carrying out work on the Operation and Training Staff throughout India.

At least some 100 officers will be needed to fill appointments; of these there will be required men of varying rank, from Colonel to Captains.

(2)—HOW TO SELECT THE FIRST MEN.

Now that the Indian Staff College or War School has been inaugurated there will be a continual stream of specially-trained men to select the junior men from. The first members will have to be

selected purely from their record and an extremely difficult selection it will be. It must be purely arbitrary, at the discretion of the Commander-in-Chief and the Chief of the Staff assisted by any advisers he may appoint. It may be desirable to appoint a very limited number of men to the General Staff as a beginning, not enough to cover the numbers of those holding office. Even some of those so nominated may be employed and may continue to be employed with their corps at any rate for some time.

It would seem that there can only be one method of forming this general cadre whose object is to include those able men who have or will devote themselves to their work alone. That method is by selection, and by the only authority whose selection can not be questioned, *viz.*, that of His Majesty, on the recommendation of the Commander-in-Chief in India, and the Chief of the Staff at Home.

Once that General Staff has been formed, future incumbents of General Staff appointments will be made from it alone. The General Staff will have two branches and for the want of some better names might be distinguished as "General Staff" and "General Staff Indian Branch," rather than as "Imperial" and "Indian." Despite sayings to the contrary there is something in a name. One of the points to be settled in India would be the number of appointments to be held by Officers of the Indian and what we are pleased at present to call the British Army. This proportion should be maintained only in the actual appointments and not in the nomination to the General Staff Cadre. This maintains the principle of widening the net, so that a man need not be debarred from appearing on the list of the cadre because there does not happen to be an immediate appointment ready for a man of his branch of the army.

(3)—THE MAINTENANCE OF THE LIST.

Now that we have our annual outflow of men from the Indian Staff College added to the men who come to us from Camberly, the fresh appointments to the General Staff will present no difficulty.

If a young man wishes for advancement and has the necessary ability, let him go through the Staff College Mill. If the Authorities find a man who is worth having, who for some reason or other has not gone through the mill let them appoint him without it, so that the net be wide. A corollary of this principle of making the Staff College the stepping stone, without actually recognising its certificate as conferring a right to even probationary appointment to the General Staff, must be that we must prepare to enlarge the accommodation at that establishment as time goes on.

(4)—WHAT TERMS TO OFFER THEM.

Now we have come back to the old proposition that the labourer is worthy of his hire, and that once an officer has been selected for the General Staff, we must be prepared to do something for him in return for the constant unwearying work we propose to exact either

in his capacity as a staff officer or in that of a leader of thought and of training while with his unit. We also want to offer more or less certain continuity of employment, and not to subject him to ruthless retransfer to his regiment in perhaps the uttermost corners of the empire, with no certainty that he will be re-employed.

We have also to take human nature into consideration, and this is a very big item, and must not be overlooked when we settle the matter of special terms for the General Staff.

The Memorandum addressed to the Chief of the Staff at Home, by the Secretary of State for War, in November 1905, distinctly laid down the principle that men definitely selected for the General Staff, after some qualified probationary period will receive accelerated promotion. The Minute in question stated that the best method of accelerated promotion would be by Brevet up to the rank of Lieutenant-Colonel and by substantive promotion after. The period of probationary service was put at four years, while the accelerated promotion being army rank, men from the General Staff could be sent back to units without superseding officers who had remained in the regiments.

Now in our service the system of advancement by selection has always been opposed, and very often the result has been selection by interest. This may have perhaps been tolerated because those selected by interest would be lighter taskmasters than those selected for their zeal. Gradually we have seen the principle of advancement for efficiency gain ground, and whenever we have had a big war the capable men have at once forged to the front. The army has now got to reconcile itself to conditions that apply in other ranks of life, in which zeal and ability combined gain the first place, while those so constituted that they prefer a lesser strain will get the lesser if not less honourable place in life.

Every one does not wish or does not feel equal to taking a leading place in their walk of life. They are by disposition content to live a work of average and not too strenuous endeavour living at peace with their neighbours and amusing themselves according to their own bent. There are many to whom the peaceful life in a good regiment with the round of work in training men they like, and the companionship of brother officers, is the most agreeable. They may be said to form a very large proportion of the ordinary English gentlefolk class that select the army as a profession; the efficiency and fame of their corps is the object of their lives.

The mass of men who enter the service, look to the command of their regiment as the probable and desirable finale of their career. The contentment of men who embrace the regimental career is one of the first essentials of a good army. To reconcile the mass of officers to see in the future accelerated promotion go by merit rather than by the traditional favour, it is essential to ensure that their lot is a contented one. At Home, where we pay officers a pittance whereon they can only starve, something will ere long have to be seriously taken in hand. There after all the strain and tests that

a man must go through before attaining to the command of his unit, his emoluments are absurd.

Here in India fortunately the position of the Commandant of a corps is suitably and properly paid. It is a position of which the five years tenure is a reasonable and suitable goal. To make the regimental officer, pure and simple, content with the fate that sends more able and more ambitious men fizzing over his head (which in other walks of life is but the operation of the laws of nature) it is necessary that the senior positions in a regiment should carry a better average of pay than now. At present the difference in pay between the Commandant and the next senior is very considerable, and it is only reasonable that a man when reaching the age of from thirty-five to forty, should find that he is earning a decent competence. With a soldier it must always be remembered that his life is at the beck and call of his masters, and must be included in his pay.

It is believed that the system that confines high advancement in the army to those who set themselves to merit it, early in life, will be accepted as desirable and business-like by the army at large, if the claims of the regimental officer to a living wage are remembered. In India this will probably be met if the position of the next two seniors to the Commandant can be improved, but not at that officer's expense.

The foregoing has been dwelt on at some length because many who have studied the vital question of a General Staff have been held up over this very question of the contentment of the rank and file of Army Officers, and the opposition existing to special promotion for the *élite*.

We have now practically got to the stage when the army will have to accept it, whether it likes it or no, but in the writer's belief the opposition will be trivial if at the same time there is a spirit manifest to improve the position to which it officially relegates the majority of those who are not mustered early in life with the General Staff Cadre.

The position of such officers has, as a matter of fact, always been much the same, but the turn of the wheel of chance or of interest could do more for unqualified individuals in the past than it will do in the future.

The system of brevet, as it has prevailed in our service, has been full of anomalies. Save to the rank of Colonel, a campaign was as a rule necessary as an opportunity to advance a man whose early advancement was distinctly for the good of the service, and of the country. Under the proposed scheme it will come as the reward of efficiency in the higher military art. The proposal to confer brevet promotion, after four years' probationary service has resulted in permanent appointment to the General Staff, seems a reasonable one. It will certainly be an immense incentive to good work.

RESUME.

The foregoing discussion and arguments may be briefly summed up as follows:—

The Formation of the General Staff.

- (1) This to be formed by the creation of a cadre of selected men, from which appointments to do 'General Staff' duties shall be made.
- (2) This cadre to be, as a commencement, formed entirely by selection from officers considered to possess the necessary qualifications.
- (3) Appointments to this cadre to be made irrespective and apart from the actual work the candidate may be doing and need involve no immediate staff employment. Appointments to be probationary for a period of years. That of four years as outlined for the General Staff in England seems equally suitable for that in India.
- (4) Reappointment to the General Staff Cadre, which shall be called the General Staff, at the close of the probationary period, to carry with it brevet promotion under rules to be laid down, up to Lieutenant-Colonel and substantive promotion to Colonel. The actual details of such rules appear beyond the scope of this essay.

THE MAINTENANCE OF THIS STAFF.

The General Staff after its first arbitrary formation, to be maintained chiefly by the appointment of graduates of either of the two Staff Colleges, of which however the certificates would not in themselves necessarily give a direct claim to appointment to the General Staff.

The possession of this certificate to be the usual qualification, since the State has a right to insist that only those who will take the trouble to train themselves shall participate in the advantages offered. Nevertheless the State in its own interests shall be able to appoint suitable men at any time without such qualification.

A corollary, which might have been included in the body of the essay, is that it is only fair that officers, students at the Staff Colleges should draw sufficient allowances to meet their legitimate expenses.

THE TRAINING OF THE CAVALRYMAN.

BY VON EBERT, CAPTAIN AND ADJUTANT OF THE 2ND ROYAL
SAXON CAVALRY BRIGADE NO. 24.

(Translated in the Intelligence Branch of the Quartermaster-General's Department in India, from articles in the German Militär-Wochenblatt Nos. 59—61 and 71 of 1905.)

Riding School Duty.

The best branch of our Cavalry Service, namely the training of the excellent horse material at our disposal, frequently causes the devoted cavalry officer to exhaust all his energy in the schooling of horse and rider. This accounts for the fact that those squadrons that excel at riding school inspection often fail in other duties and especially in the most important one, service in the field.

Involuntarily one must ask oneself at this oft recurring observation, whether it is absolutely necessary to expend so much valuable time and, what is still more valuable, the energy of the most capable officers of our arm, in maturing the horsemanship which we often find with pleasure and pride in the best riding squadrons of the Army. I think I must answer this question in the negative.

The only object of our cavalry training must be to have at all times a perfectly trained troop ready to take the field. The passion for skill in the riding school must give way to this most important requirement, and must not cause duties such as field training and musketry to suffer. If our men during the winter half-year only ride in the riding school or manège, and are employed only occasionally and partially in small field service exercises as fixed by the regiment for the training of officers, then training for field service is out of the question.

But in my opinion there are also other disadvantages in giving riding school duties undue prominence. The example and the good results of riding masters favoured by Providence lead astray other squadron commanders who have less natural capacity as riding masters to enable them to compete successfully with their envied comrades.

Feats in horsemanship are attempted, which are neither consistent with the skill of the riding master, nor the ability of the students. Also indifferent riders are asked to passage, go about at the gallop and make the horses change feet to which end wrong means are applied, and in this way the good intention to obtain the same excellent results as perhaps the next squadron is harmful to both horse and rider. The horse that has not yet learnt to let itself go becomes forced into an artificial pace. Naturally it tries to fight

against this restraint or to deceive the rider by eluding the aids. It either becomes obstinate or makes false movements, and consequently loses its paces, forges or goes lame. In any case the object of the schooling, etc., is not attained; instead of becoming more supple the horse becomes stiff. It either takes hold of the bit or gets away from it.

If we look at the young remounts a short time after they have accustomed themselves to the weight of the rider, we see pretty, natural paces, a swinging extended trot, and a long pretty step. In the first year, during which only small demands are made and the horse is ridden with a long rein, its paces are only slightly altered. Moreover a horse mostly remains good-tempered if its master is not really bad. In the second year, however, when the so-called "shortened trot" is introduced into the task to be learnt, the picture changes considerably. The pretty, natural trot disappears and, in its place, a tired slow movement of the forehand sets in, the extended step is lost and many a horse accustoms itself to jogging which, later on, can only be got rid of either after much difficulty or never, and all this happens while the horses are being ridden by the best riders of the squadron.

But for carrying out such a simple sounding command as: "Squadron with shortened movement trot!" something more is required than the skill of the best riders of the squadron. I mean that it is so difficult to ride at a proper shortened trot, that to do so it is necessary for the rider to be specially gifted and well taught, for a trot that is only shorter than the natural one, or whose swing is not increased, or may even have been lost, is a wrong way of moving. To produce this swing more is required than we as a rule are able to teach a man in one or two years' service, nevertheless how often we hear, at recruit rides, the command "with shortened trot" the result being as if one had ordered the gradual falling to sleep of horse and rider.

The object of our whole riding course is after all to enable the rider and horse to get to any place on the ground that the former may wish. For this purpose it is of course necessary that the rider should possess a certain amount of skill in riding and the horse a certain amount of suppleness and absolute obedience to leg pressure. To attain this it is necessary that the training of horse and rider should take place in the riding school, and indeed this must be really thorough in order to arrive at the desired end, but should not be such as to exceed the capabilities of the average instructor or student in riding school. The object must not be to practice riding school feats, thus wasting endless valuable time, for the whole work there must only be a small part of the way which leads to the lofty aim, readiness for taking the field. Excessive demands in the manège and riding school exhaust man and horse, therefore only that should be taught which belongs to riding in the field, in order to do justice to field service regulation No. 1. "Out on the road and into the country, in wind and weather by day and night, at all times of the year!

Men and horses must be trained up, hardened for war." Then the cavalry will be of use in case of need and will not fail when hardships have to be undergone.

Drill.

In continuation, first and foremost we require training in reconnaissance duties and shooting, and secondarily in the use of arms and drill. Perhaps I may be reproached with the conception of only giving drill the second place, but the forms of mounted cavalry combats are so simple that the practising of drill formations only takes up little time. The difficult evolutions in half column, the three-eighths wheel of section, advancing in an oblique direction, the right about wheel in column, these are only drill exercises and are not used at manœuvres with the exception of that laid down in drill regulation No. 1, 2nd paragraph, which is carried out in the field. Riding in march column, forming section column and line, and especially riding at a gallop in these formations, the steady advance and following by signal, these are exercises in the faultless execution of which the trooper must strain every nerve. Everything else, especially drilling in larger bodies, is the particular work of the leaders. What should however be practised much more frequently is the delegation of the higher commands even to N.-C. O.'s. The youngest non-commissioned officer and the Lance-Corporal must be able to ride in front of their sections ; the youngest Lieutenant and the senior non-commissioned officer must be practised in commanding and leading the squadron correctly. In the field, after heavy losses have been sustained in a fight, also when the best Lieutenants are on patrol duty, the occasion will often arise when juniors take the places of those in higher command, and this should as far as possible have no influence on the fighting value of the troops. In this respect also, how often anxiety on account of the impending inspection causes this most important task of the drill course to sink into the background. One often sees even the reserve officer riding behind the ranks as a supernumerary ; while if he rides in front of the section he throws the whole squadron into confusion, but how should he be able to ride in front of his section, when the opportunity of practising this is denied him ?

I mean that, after the simplest drill formations have been well practised by the squadron, the training principally of those in the higher ranks has to be carried out to the disadvantage of the drill. One should just take a look at the mobilisation list of a cavalry regiment. What changes have already taken place there ! A number of the older officers have been designated to posts outside the regiment, young ones on the active list take their place, and especially reserve officers who are in excess even of the active list subaltern officers then present. What will then become of the pretty peace picture, should we wish to take part in difficult evolutions ? And how will the picture change after the first battles ? In the history of war there are enough examples which prove in

what very responsible positions the youngest of officers and non-commissioned officers find themselves owing to stress of circumstances. Are we to meet these events unprepared? Drill should always be carried out in a manner corresponding to real warfare, that is, with a simple military situation as foundation and the sending out of reconnoitring detachments. This constant sending out of patrols has the great advantage that, in addition to the drill, reconnaissance and especially despatch riding are practised and that the squadron becomes able to drill in close formation even although several of the men and commanders may be absent. I will return to reconnaissance and despatch riding later on.

I should now like to express my views on drilling at the gallop.

When do we ride at a gallop? When we wish to advance quickly. Therefore the practising of a short gallop as prescribed in the drill has no object. When we gallop in earnest we shall mostly use the extended gallop, be it in the attack on infantry or artillery, or in order to gain cover rapidly from the enemy's fire. All movements which in real warfare required rapid riding must also be carried out at manoeuvres at a hand-gallop. Rapidity is our chief weapon and this weapon must be tempered in peace time.

The cavalryman must become accustomed to the gallop. The Light Cavalry Hussars, Dragoons and Uhlans must have no other thought than that galloping is their natural pace. But the heavy cavalry must also be able to gallop with a long rein and with them also great value must be set on a fast gallop. All attacks, especially in large bodies, must be made at the gallop. More value should be set on closing at the gallop by signal, and rapidly deploying into lines in close order from mass. The trot at drill should never exceed the prescribed regulation pace; it is better to trot shorter than trot out too much, as for a more rapid advance we have the gallop which is not so tiring as trotting out. On the other hand trotting out should be well cultivated in the riding school.

It is certainly a pity that in winter the condition of the ground generally prevents horses from being given hard galloping exercise. On the other hand if work in the riding school were restricted, as straight runs for hard galloping seldom exist therein, and if every opportunity even in warm weather, or soft snow, were employed to gallop the horses, then it would certainly be possible to have them in better condition in the spring.

However for this also time fails! How is the squadron to satisfy the requirements of the riding school inspection, if riding school is not held every day? I do not mean to imply that inspections are of no use and harmful to training: on the contrary, inspections are absolutely necessary in order to point out how, step by step, the goal—perfection in the field—may be reached, but little should be expected from work in the riding school, whilst for the employment of the troop in the field the very highest demands should be made. The best test whether the winter training has been a suitable one is the actual fitness of the squadron for the demands of real warfare

by the 1st of April, after which date the recruits should take the field. It is therefore necessary that by 1st April a sufficient training in field duties and especially in musketry should already have taken place and that the recruits should be able to drill with their squadrons, but this can only be attained if the demands of work in the riding school are lowered.

Almost daily small patrols should be sent from the cavalry to the nearest infantry garrisons for the purpose of bringing information as to what the infantry are doing. By day and night, in all weathers and under all conditions of the ground, patrols must be sent out, so that the men may learn to ride alone and the horses may become hardened. Every cavalryman should weekly carry out a long patrol ride. Such rides only harm those horses which are not used to them. The constant anxiety about the horse is therefore in no way applicable here. If horses are trained to hardiness, and every trial of strength is not anxiously avoided, and in winter hair as shiny as a mirror is not looked upon as the best adornment of a horse, then enormous exertions can be undergone without harm. On the other hand if during the whole winter the horses have only been ridden on the soft ground of the riding school, and have been carefully preserved from every shower of rain, also if they stand in the stable wrapped up in thick coverings, then it is only natural that a sudden long ride on hard roads in snow and ice should prove destructive. We have no use for manège horses; our service in the field is hard, and only hard natures, both men and horses, will last there.

Distance riding is even more necessary for the officer than for the trooper for the former is older and in the case of great exertions must at all times be an example in toughness and energy to those under him. This idea must have existed at the introduction of the Emperor's prize rides. These rides are a wonderful test for individual powers of endurance. For this very reason the older officers should take part in them, and although their bodies are less in training, they should yet always welcome the necessary preparation as a good opportunity for hardening the body and bodily energy. As at these rides the class of horse is fairly equal, in order to obtain a good record, nothing further is necessary than the iron will to conquer and the bodily strength to serve it well.

From the beginning of January at the latest, work in the field should be carried out twice and drill once a week, regardless of the weather, but with this, as already stated, reconnaissance and despatch riding should go hand in hand.

Musketry.

Firing with ball must also be begun by the recruits at the beginning of January, while the older soldiers should certainly shoot throughout the whole winter.

Our musketry training has indeed made extraordinary progress during the last decade. In shooting on the range at the shorter distances we nearly approach the performances of the infantry,

But what we yet fail in very much is training in field practices and especially the suitable control of dismounted combat and field firing at long ranges. The peculiarity of our weapon requires that as a rule we should only carry on a dismounted combat at medium and long ranges, that is, at distances over 650 yards. During range practices however we shoot from 550 up to 650 yards.

To fire at long distances on the range seems to me to be useless for cavalry as already now the targets in the butts are unnaturally large and, even if the cavalry through clever leading and in consequence of its speed and mobility, may find an opportunity to surprise and fire on hostile march columns, that is, large targets, this will always be only a short lucky moment. Otherwise it depends on the manner in which the attack or defence is carried out. In the above case only the smallest targets are offered and on these the untrained eye finds great difficulty in taking aim. Now, unfortunately, the dismounted combat of cavalry is regarded as a burdensome addition by a large proportion of us and especially by the older officers who do not wish mounted combat to be supplemented in any way. Dismounted combat must never be resorted to only as a makeshift, and yet, on account of the enormous improvement in the technique of arms, this makeshift will often be the only means in future campaigns to enable the cavalry to take an active part in the fighting during a battle. The manœuvre display, in which the cavalry often enough—but without regard to the condition of the hostile infantry—attacks, is good practice for leaders and troops, but would quickly disappear in war. That we can when mounted materially influence the result of a battle is an undisputed fact; but this use of cavalry might well be confined only to cavalry combats and to complete the destruction and pursuit of beaten hostile infantry after the latter has extricated itself from the fire of the pursuit. Whether it is yet possible in these days to charge unbroken infantry, in order to give breathing space to one's own infantry, is at least open to doubt.

As a set-off to this I believe that, provided we have a more suitable training in dismounted combat, we shall, even with our carbines, be successful against infantry.

It has often been pointed out that, in war, with respect to personnel, we are better off than the infantry. For this we have to thank the three years' service system for, with the exception of a small complement in the mobile squadrons, two-thirds of the men are in their second and third year. Only one-third are recruits, or otherwise the last year's reservists. We require 15 to 20 men per squadron to replace casualties. In the infantry the company consists of only about 60 second year men, that is, scarcely a fourth of a war company. A second quarter consists in summer of recruits, in the winter of the last year's reservists. Everything else is normal. In the cavalry for dismounted combat, taking the same number of men there are available about three times as many officers—mostly on the active list—as in the infantry. Under these circumstances should we not be in a

position to hold our own at least against the same number of rifles? Yes! and even to assume the offensive with energy! Should not a cavalry division, having reached the flank or rear of the opponents, be more effective on foot with their carbines and make a more lasting impression than on horseback when the fire of their own infantry and artillery generally becomes masked or has to be endured?

Of course in time of peace more prominence must be given to dismounted combat than has been the case up to date, not only in range shooting, but specially in field firing, the neglected stepchild of our training.

Nowadays a suitable training in dismounted combat can scarcely be mentioned. Aiming drill as a preparation for range shooting and also practice in group and section firing are indeed carried out, but, for a thorough training, both understanding and enthusiasm fail. Judging distance and instruction of the man in the use of cover and in picking out small objects at long ranges are certainly theoretical conceptions which are discussed in many musketry regulations: but they are not carried out with that zeal which would be shown if training in dismounted combat were recognised to be an essential factor in fire tactics in the present day use of cavalry. With us the view that dismounted combat should be of secondary consideration is unfortunately a too deeply rooted conviction.

Certainly, our field practices, which never consist of more than one day for group and section firing with very limited ammunition, are not sufficient to give the cavalry faith in their weapon. As, however, the existing regulations and fixed number of rounds have to be reckoned with, at least a higher value should be set on the preliminary training for field firing. It would be very desirable if the training of our officers in musketry could be carried out by specially selected infantry officers either by attaching a senior infantry officer to the cavalry, or by making the cavalry officers be present at the shooting practices of the infantry. This measure would no more prove the incapacity of our arm than the order for young infantry officers to be attached to cavalry regiments for training in riding reflects on the capacity of the infantry. This order has indeed often been of advantage to us by having trained officers present at our musketry. But as these are only subalterns, who have not yet conducted the musketry training of a company by themselves, this advantage loses some of its value, especially as these officers are only attached during the winter in which, unfortunately, we are tied down to the riding school.

Field Service.

How often one hears complaints about the cavalry being employed in small infantry field manoeuvres, and yet just this co-operation with the sister service is so instructive that it cannot be practised too often. The disadvantage of small cavalry garrisons is that this constant association with the other arms is wanting, and that for reconnaissance purposes the very questionable remedy of marking

with flags must always be resorted to. At manœuvres the recruit sees real troops for the first time, and then it is too late to begin his practical instruction. How difficult it is for the untrained eye, to recognise the strength and formation of the enemy; how can reconnaissance during a fight succeed, when no knowledge of the fighting tactics of the other arms is forthcoming? With astonishment and interest the patrols will perceive how the long column of the army moves forward, how the development for the battle is effected, and how the troops are shifted about, but, not understanding the meaning of all these events, what information can they convey?

Much may certainly be accomplished by means of theoretical instruction; but the eye is only trained by practice, and only a practically trained eye and ocular demonstration enable useful information to be imparted. This is the case, not only for the ordinary man, but just as much so for the non-commissioned officers and officers. For this reason we should gratefully welcome every occasion on which we are employed along with infantry in field manœuvres during winter, and not be always thinking what is being missed on this account in riding school. It is also of special importance that the young cavalry officer should make himself thoroughly acquainted with infantry fighting tactics, in order to be able by suitable instruction to impart this knowledge to his men both indoors and outside on the parade ground, or in the country. The knowledge acquired at the Military Schools is not sufficient for this.

Reconnaissance of the enemy's development for battle, especially while it is being carried out, is so difficult that only that man can collect useful information who with clear understanding is able to judge the movements of the infantry. That our patrols lack this understanding is proved by the fact that at manœuvres reconnaissance during the fight is again and again found fault with in higher quarters. There is no lack of inclination or keenness in the work, and this is apparent at the beginning of the training, for as soon as the enemy has been located, the despatches pour in in such numbers that the Commander is scarcely able to read even a portion of them. When however the first shot has been fired, then the information ceases, not perhaps on account of fatigue, or deficient zeal, but solely because further information is lacking.

He who is lucky enough to command a squadron, in a garrison composed of infantry as well as cavalry, should use every opportunity to be present with his men at all drills of the former, be it on the parade ground or at field training, so as to be able to account for the actions of the sister service. Just this practical instruction I consider as most important, for the representation of infantry tactics which one can show indoors on the blackboard or by means of matches differs so considerably from the reality that this method can, strictly speaking, only be instructive to him who by practical schooling has the essence of infantry tactics at his finger ends.

The cavalry is called the eyes of the army and rightly so, for the principal aim is and remains reconnaissance. A little good exhaustive

information by the cavalry is often more important for the main issue than brilliant successes in arms; the pleasing feature of our employment is that the lowest in rank, even the common trooper, by timely and reliable information can materially assist in the result of the whole. In peace, situations are mostly so clear that the commander is soon informed of the condition of the enemy, but how will it be in real warfare in unknown country and, let us hope, in that of the enemy? We may then expect, both as regards quality and quantity, only a very small fraction of the despatches written and correctly received in peace time. The better, however, our despatches are in peace, the better will they be in war. In order to come nearer reality in respect of despatches it might be worth while to instruct all umpires to take all despatches of despatch riders in their neighbourhood and to give receipts, in order to make the commander of the whole force grope more in the dark and yet not to take away the keenness of the cavalry in their work. These despatches should then be made over for criticism in order to get an opinion as to how the reconnaissance has worked and in order to ensure the leaders of patrols receiving any praise or censure earned. Nothing is so harmful as to ignore the information sent in, and that person who, at the time for criticism, has no word for the efficacy of the cavalry will always be the first to detract from the services of this arm.

Umpires, or other similar agencies, should be appointed to put individual patrol commanders out of action, so that the patrol may learn to act without its leader. The patrol leader might then find employment as an assistant to the umpire, which again would be good practice for the former in judging the situation. About this putting out of action of a patrol leader the cavalry commander of course should only be informed incidentally by the patrol itself.

The greatest value must be set on reconnaissance and despatch riding because they include the most difficult branch of cavalry duties. If we really want to train responsible patrol leaders and riders, then this duty must not be confined to their theoretical instruction indoors and to occasional employment as patrols at field manœuvres. The preliminary exercises must rather consist of—

1. Theoretical instruction.
2. Practical instruction in the field.
3. Practice in carrying verbal and written messages on foot and mounted.
4. Map-reading and finding one's way.

Theoretical Instruction.

Theoretical instruction must in no way degenerate into a catechism which can be learnt by heart, and all questions must rather be put in such a manner that for the answers original thought is necessary. Only in this manner can we force to logical thought those who are for the most part intellectually but very slow and who shrink from the least effort to think. From the first lesson of the recruits onward some quite simple military situation should be introduced as a foundation for

discussion. The recruit should be provided at once with the military map of the district and instruction should proceed something after this fashion. A detachment consisting of one battalion, one squadron, and one battery on the 10th of October will leave village A in order to attack an enemy who has occupied a height near village B. Now look up village A. Village A lies on the road which leads from barracks to the parade ground. (This road the recruits already know, as, thank God, there is not always room for the recruits in the riding school and the barrack manéges.) The road leads towards the north, that is, upwards on the map, for on all our maps the north is at the top, south at the bottom, east to the right and west to the left. What do you now actually understand by north, south, etc.? The road leading towards the village A is denoted on the map by two lines running side by side and on which dots (trees) are to be seen. In this way a high or metalled road is represented. Look up other similar high roads on the map. What do you understand by high roads? Does a high road also lead through your village at home? No. But there must be a road that leads to the neighbouring village! This road, however, is not kept up by the State but by the rate-payers. One like that is called a connecting road. On the map such a road is represented by a black line. From village A therefore where do such connecting roads lead to? In what direction does one go when proceeding from village A to village C? In village A then there was a detachment (explain this expression and write on the blackboard every strange word or every expression not understood by the men). This detachment is to attack an enemy near village B. In order to be able to do this, the commander of the detachment must first know where the enemy is and what he is doing. For this reason he will therefore send men on ahead to seek out the enemy and to bring him back information as quickly as possible. As these men are to advance and bring back information quickly, what kind of soldiers will he surely employ? Mounted men. One will not send a single cavalryman, for as you know one horse does not go well by itself, the man may be captured, and several men see more than one; moreover, when something has been found out about the enemy, some one must ride back in order to inform the commander about what has been seen. The commander will therefore not send out one man alone, but several together and such a small troop of cavalry one calls a patrol.

You will remember that it was known that the enemy intended to defend himself on a height near village B. Why should the enemy choose a height for this purpose? Who can tell me from the map where a height near village B is to be found? You see on the map the numerous small strokes. These denote the hills in the country or rather show the direction in which the ground slopes. If then on the map there is a small white spot from which such small strokes radiate in all directions, then this is a hill, or if the white spot is long in shape a ridge is denoted. (Draw and explain on the blackboard hills, ridges and valleys.) Now as you see on the

map near village B there are several hills on which the enemy might take up a position. It is also possible that the enemy will not defend himself close to the village B, but may march to some hill that appears to him more favourable, or he may even march off, because he has received news of the detachment at village A. In order to find out what the enemy is actually doing, it is not sufficient to reconnoitre only the hills close to village B but the roads and paths on which the enemy could march must be watched. One patrol cannot do all that, but several must be sent out. In our case the commander will send out three patrols and one indeed straight to village B, one to the right or rather to the east of it, in the direction of village E, and one to the west of it in the direction of village F. What road now for example will the patrol take that has been sent in the direction of village E? Describe the road to me according to the map. You see that directly the road leaves village A it is crossed by a black line with short lines across it. Just at this crossing Stn. is written. What does this mean and what does the black line represent? A railway.

In this or like manner the recruit must be taught to think for himself. Every man in the class must be occupied the whole time the lesson lasts. One will quickly find out that this kind of instruction soon greatly excites the interest and ambition of the men. The tired, bored expressions, which one only too often sees during an uninteresting lesson, will soon disappear. Each one will try by his own wits to give a correct answer before the others. It is very difficult to frame the questions so simply that even the most backward recruit can arrive at their solution by his own deliberation; but it is a task which repays all labour and the pleasure from the result will soon reconcile the teacher to the fact that this kind of instruction requires more preparation and thought than the still unfortunately common custom of cramming of set questions and answers, the meaning of which are often hid from the man.

Before all, during the first part of the lesson one must be very lavish of praise in the case of deliberate answers, even if they lead to no good result. One must not lose patience at foolish questions, but must attempt by new and perhaps clearer explanations to lead the man on to what one wants to know from him.

The principle must always remain fixed that the man thinks for himself and by degrees through his own deliberation increases his knowledge. Only knowledge acquired by the work of one's own brain is lasting, everything learnt mechanically by heart very soon vanishes and is therefore useless. I remember very well my time as ensign, and the lectures held in those days especially on the subject of "Duties." I was never able to understand the definition of discipline, subordination, faithfulness, obedience, etc., as advanced by our instructor (sergeant) or rather accepted from past generations, although as an educated man I knew exactly what these expressions meant. Often enough though, during my later service, I have heard

officers instructing in this fashion but not only about "duties" but also about service in the field.

If however the instruction for service in the field is carried out from the commencement in the manner described by me and, at every lesson, a new stone is added to the building, then for the lectures to the non-commissioned officers and re-engaged men with whom some of the especially good will be included, it will be possible to introduce more difficult military situations, also to devote the lesson to a war game on the simplest lines, which will stimulate the interest of the men still more. If in this manner subjects are touched upon, which are actually beyond the scope of knowledge possessed by the cavalry non-commissioned officer, there is no harm done whatever, but the vision of his mind will be still more extended.

Practical Instruction in the Field.

Practical instruction in the field must certainly go hand in hand with theoretical instruction. I must refer back to the first lesson of the recruits already described. On the day after this lesson has taken place they must go out into the country provided with maps. On the barrack square the military situation is again communicated. Then five or six men are chosen to ride a little in front of the column and show the way to village A. The remainder of the recruits follow out the road on the map, and in doing so it is settled by questioning, where branch roads lead to, what the names of the surrounding villages are, how hills are represented, in short, everything that meets the eye is compared as far as possible with the map. The instructors, divided up among the column, question their men, the officer controls the questions and above all occupies himself with individual men.

Having reached village A, the officer shows where and in what manner the detachment there assembles for the advance on village B. By means of questions he brings his men to understand that during the night spent in village A the detachment had to guard against hostile attack. He points out the approximate positions of the outposts and, without going into the matter deeper, may ask incidentally what the men think about the shelter for the detachment and how its maintenance is to be provided for, after which he divides the recruits into three groups, each under the command of an instructor. To these groups he assigns the patrol duties corresponding to the military situation, reassures himself by a few questions that the men understand on what road the detachment will advance and then sends off the patrols.

It is not absolutely necessary at this first preliminary training that an object for reconnaissance should exist, but before the scheme the instructors must be interviewed in order to point out to them what information to send back and how they should instruct the men during the ride. The messages of course should only be of the simplest kind and must be carried written down by the instructors. Assumed that I have 36 recruits at my disposal then each patrol

will consist of 12 men. Four messages per patrol will be sufficient, because, having regard to the indifferent horsemanship of the men, it will be well at first to arrange for each despatch being brought by three men at a time.

The march of the detachment will be marked by one or two older men who are able to write and, in addition when possible, by an instructor or other non-commissioned officer. As each message comes in the bearer repeats it verbally to the writer, so that after the training the wording may be compared with the original in the hands of the patrol commander. In this great exactitude is necessary. A man must not be allowed, even if retaining the proper meaning of a message, to alter its wording for the carrying of messages should be practice in memory as well. The despatch riders then remain with the detachment and receive further instruction about the country at the hands of the non-commissioned officer, or officer if present.

The patrol commanders during the ride do the same with the men under them. They must not confine themselves to cramming the messages to be sent, for it is first of all necessary that the cavalryman should be made acquainted with the country and map. It is immaterial if, at this period, the patrol stops for a long time in one spot where in actual warfare a patrol would not halt at all. On the other hand, the patrol must take the same route which it would take in real warfare, that is so far as the condition of the country will allow, having regard to the use of heights and evasion of villages. When the point has been reached from which the first despatch is to be sent off, the patrol commander says something like this: "I now presume that over there at the edge of the wood a few hostile cavalry are riding. Tell me from the map, what sort of wood it is, what will this small hostile detachment also be about? With my telescope I see that they are hussars with blue hussar jacket and white lace. I must now send a message to the detachment commander. Which of you volunteers to carry this first message? Where will you ride to?" The message runs: "Message from the patrol under non-commissioned officer A. Place of despatch north of village. At 9-30 A.M., a hostile patrol of hussars rode from the southern border of Y wood in the direction of village Z. Strength 6 riders; dress blue jacket with white lace." Rate—Brief summary "Hostile patrol Y wood." The message is repeated again by the three men to be sent, the meaning of "Rate" and "Brief summary"* explained, should this not have been done before, and the despatch riders set off. The patrol continues its work and sends the other messages back. The non-commissioned officer rides with the last messengers so that, within a time fixed and liberally apportioned by the officer, the whole detachment is again assembled. A short discussion over the practice is now held. Men who knew their message very well and gave correct

* Means contents of message given as shortly as possible.

answers to questions about the country, etc., are praised, and others further instructed. After this, when possible, the return march is made by another road and guided by different men. Should the training have been successful, I consider it right not to give further instruction during the ride back, but to allow the men to sing and also to smoke should the training have lasted any time.

During the next lesson indoors the practice is recapitulated and perhaps the question of the outpost is gone into a little more, or the march of the detachment is discussed. A place and situation discussed indoors is then pointed out in the country and, either several cavalry non-commissioned officers' posts are put out from whom messages are to be sent out, or the same patrols as last time are sent out again, only the detachments exchange duties.

It is of great value, as soon as possible, to show the recruit real infantry at work; they would only have been described so far. In mixed garrisons this is very easy: in garrisons exclusively composed of cavalry one is directed to constantly send patrols to neighbouring infantry garrisons. At every lesson now the demands are somewhat raised. Quite a simple military situation is of course retained, but the country is changed frequently. The patrols begin to ride no longer closed up as in the beginning but with open ranks and with confidence in themselves. I should like here to oppose a widely circulated view. How often one hears that the patrol commander should send two men, that is the point, about 50 paces on ahead, and should then follow with the remainder. This of course is nonsense, for the decisions of the patrol leader to alter the direction of march, perhaps in order to search a hill, or in order to withdraw out of site of a hostile patrol, are so sudden that it is then quite impossible to direct the point. I have also never yet seen a good patrol commander putting out an advanced point. The leader should be in front along with a good man possessing keen eyesight; the rest follow at a distance and extended. Every other method is wrong and, according to my idea, this is the only correct solution. When the lieutenant leads, the men will follow him through thick and thin. Should he be the first man shot down, then, if he belonged to a well trained squadron, some man of his patrol will certainly be able to carry out the work in case of necessity. Should, however, the patrol suddenly come on the enemy, that man must be the leader who first cries hurrah and whom, then, all will follow without wavering.

In the above deductions I have very often pointed out how very important it is for the cavalryman to be conversant with the map. This however does not mean that the map should be a preliminary condition of all efficiency in the field. On the contrary the study of the same should only teach a correct appreciation of the country and how to find one's way in it. As in war only a few maps are at our disposal, in real field training no harm must be done by the use of the map. It is wrong if here or on manœuvres each man is always in possession of a map for, in this case, the men would forget how to get on without them. Many practices must therefore be

carried out without maps in order that the natural instinct of finding one's way in the country may be retained which the uneducated man generally possesses to a greater degree than the educated. A good practice suitable also for the use in the field is to learn the map by heart, that is impressing a long road on the men's memory by aid of the map and then causing them to ride along it without its aid.

Instruction in field training embraces such a wide field that it is impossible for me here to go into the matter deeper; but if the instruction is carried out in a suitable manner and, above all, the practical instruction in the country is not forgotten, then the recruit can be so far advanced by the first of April that he makes quite a useful patrol and despatch rider.

Practice in Verbal Communication.

I should like just to mention the exercises in verbal communication which are particularly good practice for the man little used to expressing himself.

These exercises are held on foot, or mounted on the parade ground if it is required to combine individual riding at a quick pace. The non-commissioned officers work out indoors several messages and orders which they communicate singly and cause to be repeated. A man now brings one of these messages to the receiver, who causes the contents to be dictated to him. It is surprising how extraordinarily the memory of the men improves and to what perfection they soon attain in remembering even long and complicated messages. Thanks to the excellent instruction of our squadron commander, we brought about in the case of our mounted rifles that, not only every non-commissioned officer could compose suitable orders, but that a great number of the men, after a message had been read over to them once, or at the most twice, could deliver the same accurately.

These communication exercises should always have some simple military situation as foundation and should of course be combined with the constant use of the map. In the winter this is best carried out in the stable and in the summer encamped in the woods or barrack grounds.

Map-reading.

In conclusion, instruction in map-reading and sketching should be mentioned, although in this case it is not conceivable how there can be any doubt as to a suitable method. Map-reading should, moreover, be extended as soon as possible to Russian and French maps. Sketching should of course only be taught in the simplest style. A man must be able with a few strokes in a short time to make a simple sketch of a position. There are often men to be found who are very keen on drawing and who to a very complete report add a neatly drawn sketch, the completion of which naturally takes up much time. One must energetically oppose this fancy as far as it concerns messages in the field; on the other hand, one should also further develop this commendable and often expedient

zeal, for example, by employing such men in producing a well drawn plan of a situation on the blackboard for next lesson's lecture, or in drawing some piece of country according to plan during their leisure hours. Well drawn sketches of this kind can then, as opportunity offers, be laid before senior officers at their inspections of the classes, and this acts as a special incitement to the men. If there are several men talented in drawing, then they may be employed in producing a plan for a war game to be used in the instruction of non-commissioned officers and re-engaged men.

The squadron commander should not allow the training of the non-commissioned officers to go out of his own hands. I consider it practical that instruction should be imparted to these in the shape of a simple war game which subalterns also attend. If, as a foundation for this, the report of some manoeuvres is taken in which one has oneself taken part and also the corresponding report of the opponents, then the direction of such a war game does not present any special difficulties.

A war game however excites the interest of non-commissioned officers in a much greater degree than the ordinary lesson. By means of practice in carrying verbal communications and despatches the non-commissioned officers have learnt the art of drawing up orders, but where they fail in forming a correct appreciation of the situation or make a false conclusion then the war game is always useful and instructive.

From the above it may be seen that, for suitable instruction in field training, a great deal of time is necessary. This time however must be made, and it can be too, if the other subjects of instruction are curtailed as much as possible.

V. Bernhardt in "Our Cavalry in the Next Campaign," page 178, says :—

"Above all I should like to point out that it is quite superfluous to burden the recruits with long-winded explanations of soldier's duties (faithfulness, obedience and bravery) and with instructions concerning various ceremonial drills which they are never in a position to apply practically. It is besides quite superfluous to instruct men about the several parts composing the lock of the carbine and how to assemble these, and also about stable duties and sentry go. The theoretical instruction about army distribution, the handling of injuries, horse diseases and such like can be considerably reduced, as indeed often happens. A man learns sentry and stable duties, etc., easier and quicker by practice. On the other hand the time gained by all these reductions must be most zealously made use of in order to teach a man what he must certainly know on service, also about the composition of mixed forces, practical shooting and the handling the carbine as far as its exterior is concerned."

Training of the Cavalry Officer.

In conclusion I should like to say a few words about the training of the cavalry officer. Here also the object of all military training—

preparation for service—should come first. On service a tremendous amount of responsibility rests at times on the shoulders of even the youngest cavalry officers. Every endeavour must be made to fit him for this. Neither the science of the military schools alone, nor the few war games in the winter, nor the staff rides which take place seldom enough, are sufficient for this. Field training and even manœuvres naturally move within confined limits. They hardly offer opportunities for pondering over the weighty conditions of modern war. And yet the cavalry officer must be able on service to judge important strategical situations correctly, otherwise he cannot fulfil the task which the leader of a strategical patrol has to perform. How much costly horse flesh alone would be spared at manœuvres if the patrol commander were always capable of distinguishing the essential from the trivial. To supply “concise but good information” is not so easy that it can be learnt without any trouble. For this, much work and individual application is required, and above all correct guidance. Often enough the intellectual activity of the young officer is confined to the production of a field service report and a winter task. The field service report may be good practice for the young officer in expressing himself in precise military terms and accustoming himself to the necessary orders in the composition of reports, but for tactical training itself, it is only of small value. The winter tasks also only too often fail in their object. That both tasks enjoy only a small popularity is a fact, which proves that they are not suited to materially assist the training of officers. Only that kind of intellectual work will possess any lasting value which is promoted by attraction and love for the subject. Zeal and enthusiasm for active service are present everywhere, but in times of peace to guide the interest in work so as to procure lasting value for field service training is a great art. Well conducted war games and above all staff rides after the fashion of the General Staff are, in my opinion, the best means for promoting the training of the corps of officers. When these practices are carried out in a suitable and interesting manner and the interest and pleasure of those taking part are not checked by unnecessary written tasks, then they will have a stimulating effect and also urge on the officers to private study. In order to promote this without burdensome official coercion every senior officer should make a point of impressing the young officers by means of exciting instructive stories and by discourses on interesting books.

Often however intellectual activity is only confined to the study of books concerning the training of the horse, and consequently one's own training for higher duties becomes neglected. I have already pointed out how natural it is that we who feel ourselves one with the horse should look on the constant association with the same as a pleasant habit; but we become narrow-minded in consequence and do ourselves harm. The fact that squadron commanders who have done excellent work in training their squadron to ride, often fail when they become staff officers, speaks for itself. Healthy selfishness

is wanting to think of oneself and by private work to fit oneself early for higher duties. The cavalry should consider it an honour to train as much material as possible in its corps of officers for the General Staff. It is much easier for us than the other arms to increase our practical knowledge early by means of constant contact with higher staffs at manœuvres and by hearing every criticism at the conclusion of the operations. On account of our horsemanship we have an advantage from the beginning towards employment on the General Staff and in *adjutantur* posts, and yet the number of cavalrymen who enter the Staff College is comparatively small, just because this study of horsemanship claims intellectual activity to too great an extent.

If we were to look for our perfection in riding less in the riding school and more in sports, it would be advantageous. Race riding and hunting fit an officer more than anything else for forming rapid resolutions and acting with circumspect boldness. Nowhere do head and heart become so hardened as on the race course, and nowhere is the skill in overcoming all difficulties of the country so promoted as in the hunting field. If there is sufficient strength of character present in order to withstand the many temptations which, unfortunately, the frequenting of race-courses carries with it, then there is no better school for the cavalryman than taking part in steeplechases. He who has the nerve, without thinking of himself, to ride at the ugliest obstacles in a race and at the same time coolly weighs every advantage that the moment may bring, will also, provided his military scientific training has not been neglected, be able to quickly form the right resolution in the most critical situations such as war alone can bring. But the troop will follow that leader who by keen and determined riding impresses those under him, for nowhere does the example of the leader make so much impression as in the cavalry.

Unfortunately too yet another very important branch of scientific training is neglected in the case of cavalry officers, namely, the study of foreign languages. In large garrisons it is true the ways and means are found to encourage this, although here also the number of students is very small. In small garrisons this study languishes very much and can scarcely be carried out owing to lack of teachers. Yet it is of great value to the cavalryman to at least have command of the languages of the most important neighbouring countries, France and Poland and relatively Russia, so that he can make himself understood in case of need. In every regiment there is sure to be some senior officer thoroughly acquainted with the French language and who could turn it to account for the benefit of the young officers. This would not only be useful for service but would be an advantage in society and when travelling.

The best arrangement however for the scientific training of officers would be for a Scientific Cavalry School to be built as Bernhardt in "Our Cavalry in the Next War" suggests on page 191.

Remarks on the above by Major-General Schmalz from No. 71 of 1905 of the "Militär-Wochenblatt."

Many cavalrymen on reading this article will have felt the same as I did, and they will have exclaimed involuntarily: "Yes, if it were possible it would be splendid!"

Less riding school, but instead "out on the road and into the country in wind and weather, by day and night at all times of the year. Both men and horses must be trained up, hardened for war" (*vide* page 404). But how with less riding school than up till now, the remounts and recruits are to be trained, the rough-riders schooled and the carriage of the old horses lost at the manœuvres is to be restored, that is not stated by the author. For this reason I feel bound to mix water with the wine of the idealism that flows in this article. If the argument put forward is that the object of our whole riding training is to enable both rider and horse to go anywhere in the country that the rider may wish then I agree.

But I am not prepared to go further if it means that for this a certain amount of horsemanship in the case of the rider, suppleness and absolute obedience to leg pressure in the case of horse are all that is necessary. For the object just mentioned, quite apart from the attack, we require good riders and thoroughly trained horses, and these can only be produced in the riding school and nowhere else.

How much time is there now at our disposal for riding school? Cavalry regiments at the best return from the manœuvres at the end of September but often not till October. Then in every squadron there are present a number of horses requiring rest, the time-expired and rejected men leave and the recruits join. All this causes so much work inside the squadrons that there can be no question of regular riding school until November. Now the riding school inspections take place everywhere in March. The winter half-year that the author says is spent almost exclusively in the riding school and manège, therefore only consists on an average of four months. What amount of work in riding training alone can now be done in this time. A glance at the riding sections of a squadron will show this best. I will begin with the remounts which with their three years' formation alone give three squads (young and old remounts, non-commissioned officers' section). The riding instructions only speak of the first two years' service of the remounts, but on page 193 of Part II say that the horses in their third year's service are when possible to be placed together in one section for special training. After this comes Section II (a) in which 2-year men are trained as rough-riders, and lastly three to four sections of recruits and two to three of old soldiers. In the last named sections are included those riders and horses that are not fit for the better classes and who do not appear suitable either for class II (a) or the recruits. The riding instructions besides expressly state, on the page already referred to, that after manœuvres restoration of lost carriage in the case of many horses is necessary.

I ask also, what men and horses during the four months' riding school are to go "Out on the road and into the country, in wind and weather, by day and night" without the riding training becoming considerably impaired?

When the author talks of excessive demands in the riding school, of riding school sport and riding instructors' tricks, and as proof of these adduces misapplied lectures and the shortened trot for recruits, then I cannot follow him in his reasoning. These practices are surely only means to an end, in order to make the horses more supple and obedient, and, if properly applied, they thoroughly fulfil this object. When, in isolated cases, these have been misapplied I am convinced that a correction will soon have come from the superior officers concerned. On account of isolated cases one must not argue that "excessive demands" are the rule. These cases are only isolated ones and can only be such, for the absolutely necessary task to be mastered in the short riding school course is so great that most of the riding instructors will certainly not concern themselves with unnecessary things besides.

From what has just been stated it is evident that in my opinion the four months for riding school are absolutely necessary and must not be curtailed. With this division there is certainly enough time to spare for the remaining branches of practical instruction. For deducting one month for manœuvres seven months will yet remain for reconnaissance and musketry.

Again I cannot agree with the author, when he says: "If our men during winter only ride in the riding school and manège, and are employed only occasionally and partially in small field service exercises as fixed by the regiment for the training of the officers then training for field service is out of the question."

For it is a fact that all regiments during the winter, more or less according to the position of the garrison, do take part in the practices of the various arms.

In his further discussion the author places reconnaissance and musketry first, to which handling of arms and drill are to play the second rôle. But this allows me to put the question: what is the object of our drill? and I answer this question by saying that it is to make us fit to fight. Our method of fighting is to attack with closed ranks and employ shock tactics. There is probably no one now who believes that we shall be able to ride for ever, as in 1870-71, without meeting hostile cavalry. We are perfectly well aware that every opponent, just as we ourselves, will send his cavalry in advance in order to screen his own army and to discover the movements of that of the enemy. Also, the first fights will consist of collisions between the masses of cavalry of both sides, and that side which overthrows the opponent by attacking with closest ranks and greatest impetus will be free to reconnoitre, while the remainder of those overthrown will have to seek protection with their infantry. Consequently the best training in reconnaissance duties and musketry will help us nothing if we are unable to attack. This is however

only learnt by a careful drill training, and it is sufficiently known that, for this, good riders and schooled horses are necessary. But these we shall not have if, according to the suggestion of the author, only a certain amount of horsemanship and a certain amount of suppleness are sufficient. A few unwieldy horses and awkward riders are sufficient to spoil the solidity of a squadron and thereby to take away the impetus of its attack.

The article under discussion further states:—"How often one hears complaints about the cavalry being employed in small field trainings of the infantry and yet it is just this co-operation with the sister arm that is so instructive"—(*vide* page 5). Although I entirely agree with the concluding sentence, I cannot understand the complaints of the cavalry, for it is just this participation of the cavalry in small infantry practices that is mostly not only useless, but harmful, and by it our men easily get wrong ideas.

Herewith an example experienced by myself:—Two infantry reserve officers had to do their field training and for this each received a section of infantry and cavalry patrol of five men. The rendezvous of both parties were so close to each other that they could be mutually seen through the telescope, and damages to crops were to be avoided under all circumstances. As now with the exception of the roads everything was cultivated land, both cavalry patrols clattered towards one another on roads as hard as iron. They met in the middle. Result: two broken knees and a broken lance. Here any other remark is superfluous, the result speaks for itself! This however does not prevent the advantage being great in the case of larger schemes where a real reconnaissance is possible, so that a temporary interruption of riding school appears fully justified.

The author further requires of the "training of the cavalryman" that the musketry of the recruits should begin at the beginning of January, while the older soldiers must certainly fire the whole winter through. As regards the recruits I am able to agree with him in so far as that I am of opinion that they should have fired at least a few practices by the 1st of April for, in the case of a mobilisation taking place soon after this date, one might be so placed as to be obliged to take men on service who had never fired with ball. As for the rest, however, each squadron, thanks to the 3-year system, has always at least the men of one and two years' service who have completed the whole musketry training. And as a number of men have always to be left behind there will be enough for a troop in which mounted combat is the principal thing. From all that I have said before there is quite enough to show that I do not wish to see riding-school work interrupted by musketry. I cannot however forego the opportunity of quoting the opinion here, which Monteton gives about the musketry regulations of cavalry in his book "Lectures for Riders":—"Everything, everything perfect with the exception of one single statement—musketry should be carried out during the winter—although not at all necessary in the case of the infantry, proves that the instructions were made by an infantryman. Are horses then

boots, which one can let stand without harm and need not attend to or feed? When and how can men shoot during the short days of winter with the ranges so far off, without the riding and care of the horses suffering in consequence? When the riding hours take up the whole day, must the hours for grooming and feeding in small stables be discontinued by every one? Everything can be done that is ordered, but here again at the sacrifice of the only important thing with the cavalry, namely the highest efficiency of the horses. In the spring all horses come out at the same time, by 10 A.M. they are all back in their stables, and the day is free for some parade which is often half a mile from the town. Jumping, fencing, theory, exercises with arms, dismounted exercises and even aiming drill can all be fitted in between winter rides; this can all be done in front of the stables: but musketry in winter—I repeat—horses are not boots. The fact that the infantry shoots during winter is no reason that cavalry can; for the business of the former lies in shooting, but the business of cavalry in riding; also the winter which is the best time for instruction must be devoted to this principal business and not interrupt it."

I will not enter into the many other suggestions of the author of the article in question some of which are very deserving of notice and some very disputable. I have only laid stress on and discussed that which I am convinced would prove harmful to cavalry. By following out these suggestions the cavalry would become a hybrid troop for whom the description "Mounted Infantry" would not quite meet the case, for they would neither do satisfactory work mounted or dismounted.

No one can serve two masters!

Note by Major-General D. Haig, C.V.O., C.B., late Inspector General of Cavalry in India.

I consider that Captain von Ebert's paper touches on several points of much practical importance to the cavalry. At the same time I hold that some of the writer's proposals, if adopted, would prove harmful to any cavalry. Those to which I refer below seem so contrary to the lessons of history and of practical experience that no *thoughtful* cavalry officer is likely to be influenced by them.

Thus, for instance, on page 409, Captain von Ebert writes:—"Should not a Cavalry Division, having reached the flank or rear of the opponents, *be more effective with their carbines* and, above all, *make a more lasting impression than on horseback.*" In my opinion only the leader on the spot, after reaching the supposed position with his troops, can decide whether it will be best to act dismounted or mounted. Moreover, there are so many authenticated facts recorded in history of the tremendous demoralising effect of charging cavalry, provided the attack is suitably delivered, that I hold instruction in the mounted charge to be as important now for Cavalry as ever in the past. To take only one battle, Custozza:—First we find Colonel Pulz and Burjanowicz charging at 7 A.M. against the

Italian IIIrd Corps. Such was the demoralisation created by their few squadrons amongst that large force of infantry, that to quote from Fritz Hœnig, "at 11 o'clock the Corps was still halted near Villa Franca as if spellbound by some charm."

But the effect of this charge, though great, was insignificant compared with that produced by only three troops under Captain (now General) Bechtoldsheim about 10 o'clock against the 1st Division (Cerale), nearly 9,000 strong, on the Italian left.

These three troops of cavalry, only some 80 horsemen, suddenly came upon Cerale's Division when about to take the offensive. Bechtoldsheim with extraordinary pluck and determination charged the leading Brigade (Forlì), 2,750 strong, which formed the advanced guard, routed a battalion, then a battery, next another brigade and, finally, the remainder of the Division. The whole fled in such panic that it was not possible to reform until near Valeggio, several miles in rear.

It is reasonable to ask, would such decisive tactical results have been obtained by dismounting and shooting, even presuming the cavalry to have possessed the most modern rifles?

The weak point of the article under discussion is the writer's failure to grasp the importance of the *moral* factor in war. He talks about "the enormous improvement in the technique of arms" (page 408), but fails to realise that the human factor has certainly not improved of recent years in conscript armies. It seems therefore not out of place to refer cavalry officers to the report of the United States War Department, dated November 1864, upon the battle of Gettysburg, to show how arms are handled in the battlefield by the *average* soldier:—"24,000 loaded muskets belonging to one side or the other were collected on the battle field of Gettysburg. Only one-fourth of them were correctly loaded. Half contained two charges; the remaining fourth contained from three to ten. Some muskets had 5 or 6 balls to one charge of powder. In one smooth-bore 22 bullets were found mixed with powder."

It seems obvious that if the excitement of battle is such that it prevents the average man from even loading correctly, it will also prevent him from *sighting correctly* and *aiming steadily*.

Then we have the following reflexions of Von der Goltz from his personal experiences in 1866 and 1870—(*vide "The Nation in Arms" by Von der Goltz, page 261, English Translation*):—

"The cavalry will also again play its rôle in deciding the days, as in former days, when Seydlitz led the attack at Kolin, Rossbach and Zorndorf. This claim of the cavalry is, for the most part, justified by the recollection of certain situations in these wars. The lines of sharpshooters were often seen to dissolve under fire, to become thinner and thinner and, in their endeavour to surround the enemy, to extend, disperse and become ragged. Their energies became exhausted in advancing through thick corn or under-wood, in climbing hills, in a breathless charge following immediately on a long march and the evolutions of compact masses across country

The ammunition almost gave out. Many officers fell ; the command nearly ceased. Then arose in the hearts of many, who saw all this, the fearful question : how if now the enemy's cavalry appeared on the flank, and careered over the battle field ? It would without more ado sweep away the wreck of the infantry ! When, in the evening of the battlefield of Vionville, dusk descended, and scarcely anything more could be discerned of the infantry on the wide battle-field, and the great masses of the artillery of the centre, more than 100 guns strong, stood defenceless, a similar thought arose in our breasts. It appeared impossible to check a resolute cavalry charge that might have hurled itself upon these batteries. This view of the case was one of the reasons for despatching all our available cavalry against the enemy."

Again we have General Bechtoldsheim himself explaining in the "Revue bleue" (2nd October 1897) the cause of the psychological phenomenon produced by his charge in 1866 as follows :—

"Look at Ceralé's Division. It left Mouzambano at 3 A.M., and it was about 11 o'clock when I routed it. The men had been on the march for about 8 hours without a long halt : not the usual sort of march but that exhausting deadly march towards the battle field at one moment checking, at another hurrying forward, constantly preparing to deploy and attack, but never attacking. When troops are in that condition, they omit to guard themselves and forget the most ordinary precautions."

Those who have been on active service will recollect times in which the most determined and hardiest had to make superhuman efforts to keep awake and alert. It is well for cavalry officers to bear in mind that at such moments troops are at the mercy of the smallest incident and may be said to be "ripe for charging." At manœuvres however, troops are never allowed to become thoroughly worn out by fatigue and hunger. "Cease fire" is always sounded in good time. In war there is no rest except what the enemy permits us to enjoy.

And so, after reading and thinking over a certain number of the "deeds of the great masters," I have come to the conclusion that although cavalry will have to use the rifle *constantly* it must still rely on its mounted action for achieving great successes.

General Schmalz has on page 422 clearly explained how strategical reconnaissance must culminate in a tactical collision between the two opposing cavalries, I therefore need not add to his criticisms, with which I entirely agree. It should be noted, however, with reference to von Ebert's views on Riding School (page 403) that since cavalry can only in many cases carry out its duties after overthrowing the hostile cavalry by a mounted attack, the troop horse must be *thoroughly trained* and in hand. The riding school and open manege are the sole means for reaching that end. Thirty years ago the riding school seemed to be regarded as the objective. But things have greatly changed and von Ebert's criticisms on this head no longer apply. On the contrary, I hold that if the average squadron and troop leader possessed knowledge of the science of riding

there would be more serviceable horses in the ranks and "first class" polo ponies would be more numerous. Hence, in my opinion, the urgent necessity for organising in India a High School for Riding on the lines of Saumur or Hanover.

Although there are many opinions expressed in von Ebert's article, with which I entirely disagree, on the other hand, it affords subject for discussion and thus seems likely to assist cavalry officers in learning how to strike the "true balance between shock and dismounted action."

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(PRECIS BY CAPTAIN W. L. J. CAREY, R.A.)

From "**Journal des Sciences Militaires**," January and February 1906, and "**Mitteilungen über Artillerie und Genie-wasens**," 1st part, 1906.

Both these magazines give a translation from the same article in the "*Invalide Russe*." The following extracts are chiefly from the French translation with notes from the German. The original is from the pen of Lieutenant-Colonel Neznamov who appears to have served on the staff of the 35th Division of the XVII Corps. The opinions are apparently those of officers of rank in the 35th Division, and the experience that of the same Division.

A quotation from the Russian prefaces the French translation.

A year and more of war with the Japanese has provided us with ample experience and abundance of useful information. So, although it is not as yet possible to form definite conclusions, it may be permissible, without fear of falling into serious error, to determine what our permanent faults and adventitious shortcomings have been, and to outline the improvements which experience has shown to be the indispensable.

We propose to pursue the following system in making our statement:—

A.—Questions of Material.

B.—The Man (officer and soldier).

C.—Tactics.

PART I.—QUESTIONS OF MATERIAL.

CHAPTER I.—ARMAMENT.

Guns.—The Russian Q. F. guns proved remarkably efficient and superior to the Japanese guns in rapidity of fire and range. The shrapnel was excellent. There were few failures of matériel. The 35th Artillery Brigade after eight days' hard fighting on the Sha-ho had only two guns (out of 48) disabled for this reason.

Artillery ammunition.—The allowance was found to be sufficient. But the system of using shrapnel for all purposes did not survive the test of war. Experience showed that a powerful high-explosive shell, acting on impact, is an absolute necessity. The Russian shrapnel made no impression on even light works and produced no effect on troops in trenches. On the other hand, the Japanese high-explosive (*shimosu*) shell answered the purpose admirably.

I ask also, what men and horses during the four months' riding school are to go "Out on the road and into the country, in wind and weather, by day and night" without the riding training becoming considerably impaired?

When the author talks of excessive demands in the riding school, of riding school sport and riding instructors' tricks, and as proof of these adduces misapplied lectures and the shortened trot for recruits, then I cannot follow him in his reasoning. These practices are surely only means to an end, in order to make the horses more supple and obedient, and, if properly applied, they thoroughly fulfil this object. When in isolated cases, these have been misapplied I am convinced that a correction will soon have come from the superior officers concerned. On account of isolated cases one must not argue that "excessive demands" are the rule. These cases are only isolated ones and can only be such for the absolutely necessary task to be mastered in the short riding school course is so great that most of the riding instructors will certainly not concern themselves with unnecessary things besides.

From what has just been stated it is evident that in my opinion the four months for riding school are absolutely necessary and must not be curtailed. With this division there is still only one month to spare for the remaining branches of practical instruction. For deducting one month for manoeuvres seven months will yet remain for reconnaissance and musketry.

Again I cannot agree with the author, when he says that Prussian men during winter only ride in the riding school and manœuvres and are employed only occasionally and partly in small numbers in exercises as fixed by the regiment for the training of the recruits. Then training for field service is out of the question.

For it is a fact that all regiments during the winter months are less according to the position of the garrison, do take part in the practices of the various arms.

In his further discussion the author places reconnoissance and musketry first, to which handling of arms and drill are to play the second rôle. But this allows me to put the question, what is the object of our drill? and I answer this question by saying that it is to make us fit to fight. Our method of fighting is to attack with closed ranks and employ shock tactics. There is probably no man now who believes that we shall be able to ride for ever, as in 1870-71, without meeting hostile cavalry. We are partly well aware of that every competent just as we our lives would be lost every day, advance in order to reach his own army and to be able to retreat in case of that of the enemy. Also the first thing will be to get at the enemy, to overcome the mass of cavalry of both sides, and that is only to be achieved by attacking with closed ranks and with the greatest impetus with the intention to overthrow the ranks of the enemy. These overthrown will have to seek protection with their arms. Consequently the best training in reconnoissance duties and musketry will help us nothing if we are unable to attack. This is how it

only learnt by a careful drill training, and it is sufficiently known that, for this, good riders and schooled horses are necessary. But these we shall not have if, according to the suggestion of the author, only a certain amount of horsemanship and a certain amount of suppleness are sufficient. A few unwieldy horses and awkward riders are sufficient to spoil the solidity of a squadron and thereby to take away the impetus of its attack.

The article under discussion further states:—"How often one hears complaints about the cavalry being employed in small field trainings of the infantry and yet it is just this co-operation with the sister arm that is so instructive"—(*vide* page 5). Although I entirely agree with the concluding sentence, I cannot understand the complaints of the cavalry, for it is just this participation of the cavalry in small infantry practices that is mostly not only useless, but harmful, and by it our men easily get wrong ideas.

Herewith an example experienced by myself:—Two infantry reserve officers had to do their field training and for this each received a section of infantry and cavalry patrol of five men. The rendezvous of both parties were so close to each other that they could be mutually seen through the telescope, and damages to crops were to be avoided under all circumstances. As now with the exception of the roads everything was cultivated land, both cavalry patrols clattered towards one another on roads as hard as iron. They met in the middle. Result: two broken knees and a broken lance. Here any other remark is superfluous, the result speaks for itself! This however does not prevent the advantage being great in the case of larger schemes where a real reconnaissance is possible, so that a temporary interruption of riding school appears fully justified.

The author further requires of the "training of the cavalryman" that the musketry of the recruits should begin at the beginning of January, while the older soldiers must certainly fire the whole winter through. As regards the recruits I am able to agree with him in so far as that I am of opinion that they should have fired at least a few practices by the 1st of April for, in the case of a mobilisation taking place soon after this date, one might be so placed as to be obliged to take men on service who had never fired with ball. As for the rest, however, each squadron, thanks to the 3-year system, has always at least the men of one and two years' service who have completed the whole musketry training. And as a number of men have always to be left behind there will be enough for a troop in which mounted combat is the principal thing. From all that I have said before there is quite enough to show that I do not wish to see riding-school work interrupted by musketry. I cannot however forego the opportunity of quoting the opinion here, which Monteton gives about the musketry regulations of cavalry in his book "Lectures for Riders":—"Everything, everything perfect with the exception of one single statement musketry should be carried out during the winter—although not at all necessary in the case of the infantry, proves that the instructions were made by an infantryman. Are horses then

boots, which one can let stand without harm and need not attend to or feed? When and how can men shoot during the short days of winter with the ranges so far off, without the riding and care of the horses suffering in consequence? When the riding hours take up the whole day, must the hours for grooming and feeding in such stables be discontinued by every one? Everything can be done that is ordered, but here again at the sacrifice of the only important thing with the cavalry, namely, the highest efficiency of the horses. In the spring all horses come out at the same time, by 10 A.M. they are all back in their stables, and the day is free for some parade which is often half a mile from the town. Jumping, fencing, theory, exercises with arms, dismounted exercises and even aiming drill can all be fitted in between winter rides; this can all be done in front of the stables, but musketry in winter. I repeat—horses are not boots. The fact that the infantry shoots during winter is no reason that cavalry can't for the business of the former lies in shooting, but the business of cavalry in riding; also the winter which is the best time for instruction must be devoted to this principal business and not interrupt it."

I will not enter into the many other suggestions of the author of the article in question some of which are very deserving of notice and some very disputable. I have only laid stress on and discussed that which I am convinced would prove harmful to cavalry. By following out these suggestions the cavalry would become a foot troop for whom the description "Mounted Infantry" would not quite meet the case, for they would neither do satisfactory work mounted or dismounted.

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Thus, for instance, on page 409, Captain von Elert writes:—"Should not a Cavalry Division having reached the flank or rear of the opponents *be made enter into the line of battle* and also *make a more last of compass and march orders*?" In my opinion only the leader on the spot after reaching the supposed position with his troops can decide whether it will be best to attack on foot or mounted. Moreover there are so many authorities of long record in history of the triumphs of dismounted as against mounted cavalry provided the attack is suitably delivered that I hold instruction in the mounted charge to be as important now for cavalry as ever in the past. To take only one battle, Clusium, 509 B.C. First we find Colonel Pitz and Etruria were charging at 7 A.M. against the

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But the effect of this charge, though great, was insignificant compared with that produced by only three troops under Captain (now General) Bechtoldsheim about 10 o'clock against the 1st Division (Ceraie), nearly 9,000 strong, on the Italian left.

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Artillery ammunition.—The allowance was found to be sufficient. But the system of using shrapnel for all purposes did not survive the test of war. Experience showed that a powerful high-explosive shell, acting on impact, is an absolute necessity. The Russian shrapnel made no impression on even light works and produced no effect on troops in trenches. On the other hand, the Japanese high-explosive (*shimose*) shell answered the purpose admirably.

Field Mortars.—Under existing conditions the field mortar must be considered as lacking in both accuracy and power. Bombs were fired in combination with shrapnel from the field-guns.

From the experience gained the ideal piece should have a powerful high explosive shell, be capable of employment at long ranges and at the same time possess the mobility of a field-gun.

Siege Ordnance.—These were made use of on both sides, but for different reasons. The Russians employed siege guns to supply the place of the high explosive shell with field artillery. The Japanese brought up their heavy guns to assist their weak field artillery and to answer the Russian heavy ordnance.

The effect produced, however, was for the most part insignificant. This was especially the case with the Russians, from the fact that fire control did not lie in the hands of the commander of the section of ground. Still, on the rare occasions that fortified Japanese villages were bombarded, the results were strikingly successful.

The general conclusion arrived at is that in field warfare siege artillery, though frequently useful, is not to be considered a normal feature. The Japanese heavy guns at Mukden owed their presence to the fact that the railway was working. And even so the Russians do not admit that the fire of these guns had any effect in forcing them to abandon the position. They allege that the Japanese turning movement was the sole cause.

The German translator in the "*Mitteilungen*," notes that three batteries of 6-inch field howitzers were employed by the Russians towards the end of the war. He gives a list of some of the guns, etc., used :—

6-inch (15 cm.) heavy gun, M. 77. Length 22 calibres. Weight 190 *Pud.* = 61 cwt.

4.2-inch (10.7 cm.) gun, M. 77. Length 35 calibres. Weight 80 *Pud.* = 26 cwt.

6-inch (15 cm.) light gun, M. 77. Length 21 calibres. Weight 120 *Pud.* = 39 cwt.

8-inch (20 cm.) light gun, M. 87. Length 15 calibres. Weight 190 *Pud.* = 61 cwt.

8-inch (20 cm.) light mortar, M. 87. Length 7.5 calibres. Weight 70 *Pud.* = 22 cwt.

9-inch (23 cm.) light mortar, M. 87. Length 7.7 calibres. Weight 100 *Pud.* = 32 cwt.

6-inch (15 cm.) field mortar, M. 86. Length 8.4 calibres. Weight 28 *Pud.* = 9 cwt. Very light and mobile, but the mobility is attained at the cost of the ballistics.

The 6-inch heavy gun, M. 77, and 6-inch light gun, M. 77, were replaced by the 6-inch long gun of 30 calibres length and 200 *Pud.* weight, and the 6-inch howitzer of 70 *Pud.* respectively.

1 *Pud.* = 36 lbs. (Avoirdupois).

Machine Guns.—These have acquired considerable importance. The Russians are even said to have preferred them to field guns.

Units of 12 to 16 guns attached to Divisions are recommended. Man transport is considered suitable for infantry.

In the offensive machine guns are a necessity to secure captured points against counter-attack.

Armes Blanches.—Both sword and lance were used with effect. It is proposed that the artillery sabre (*chuchka*) should be replaced by a side-arm (*kinjal*) as the former was found to impede the gunners' movements.

Hand Grenades.—More especially from the *morale* point of view, these proved extremely useful. The small Japanese spherical grenade is considered a more suitable model than the long Russian pattern. The latter is both complicated and cumbersome.

CHAPTER II.—DRESS AND EQUIPMENT.

This chapter represents the opinions of a committee of senior officers in the 35th Division.

Dress.—Two uniforms are generally favoured; of these one should be a peace dress, as smart as possible, with the idea of giving the soldier a good conceit of himself and attracting recruits. The other uniform should be designed entirely with a view to field service. The principal features of this service dress appear to be:—

1. A blouse-shaped tunic with four pockets. The material to be cloth for winter and cotton for summer. Colour, darkish-yellow.
2. Wide trousers of the same.
3. A light cap with chin-strap and soft peak. Colour, similar. The winter head-dress to be a felt cap with flaps for ears and back of the neck. A metal figure to show the regimental number.
4. A loose-sleeved cloak (*capote-manteau*) with cape attached.
5. Shoulder-straps, collar badges, etc., to be of the colour of the tunic. It being the present custom, as explained by the French translator, to wear shoulder-straps, etc., of different colours according to the Division, etc., to which the man belongs.

Equipment.—As pointed out by the French translator, the Russian soldier carries rations, reserve cartridges, etc., etc., in two large bags worn cross-wise.

The chief Russian recommendations are—

1. A waist-belt with buckle.
2. Water-proof pouches holding 40 to 60 cartridges suspended from the waist-belt.
3. A breast pouch (*cartouchière*) for 60 cartridges.
4. An additional reserve pouch for 60 cartridges, to be worn on the waist-belt behind, is necessary. In it should be a small store of cleaning material, etc., for the rifle.
5. The wooden water-bottle was a failure. It was impossible to keep it clean, and there being no drinking cup, one had to be issued separately. The result was that this loose cup rattled against everything. A felt-covered aluminium water-bottle with cup fitted on is required.

6. The aluminium camp-kettle was not a success. It proved too weak for the wear and tear of a campaign and the acids in the food reacted on the metal. Copper or iron should be substituted.

7. A light strong metal spoon is most necessary.

8. The kit-bag should be replaced by a waterproof haversack. In it should be —

One day's biscuit, two days' sugar and tea, one shirt, one pair drawers, two towels, one pair Russian socks.

Warm Clothes.—Gloves with thumb and one finger only, a fur or wadded vest to wear under the blouse. Wadded breeches.

Portable Tools.—The small shovel was satisfactory, only requiring a stronger handle.

The hatchet was too light and not strong enough.

The allowance of shovels should be *increased to one per man*. It is practically impossible to lend tools from one company to another, as under shrapnel fire *every one must take cover in trenches (not excepting reserves)*.

Axes are frequently useful and should be provided for all ranks, except sergeant-majors, drummers and stretcher-bearers. A few picks are also desirable. Also one jointed saw per company.

The French translator remarks that this experience confirms recently advanced theories in the French army that the tools carried in the infantry are far from sufficient. The Japanese carried one tool for every two men (not counting reserves), and this was not enough.

CHAPTER III.—FOOTGEAR.

Footgear is considered sufficient of importance to demand a chapter to itself.

The high shoe (*brodequin*) is considered to most nearly meet all requirements. It should be laced or fastened in some other way, and connected with the trouser-leg by putties, gaiters, etc. Soles and uppers must be of the best quality.

A pair of light, easy shoes for camp wear is also necessary.

The footgear proposed are supposed to be sufficiently strong to render it unnecessary for the soldier to carry a second pair. But the regimental baggage should contain a reserve of boots, etc., and repairing material.

Blackened boots were a source of continual trouble during the war. Well-greased brown leather should be substituted. For winter the usual Russian felt boots (*valenki*).

Generally speaking, items of dress, equipment and footgear should be as simple as possible, but of the best obtainable material and manufacture. By this means alone can these articles be made strong enough to resist the hard usage of active service. Moreover, the simpler the nature of the article, the easier it is to carry out repairs on the spot.

CHAPTER IV.—FOOD.

Daily Ration. Meat.—One *livre* (about a pound) per man per day is quite sufficient. This should for choice be divided into two meals as a change. A third of the beef ration may be replaced by pork with advantage. In winter salt meat may be issued, but not oftener than once a week.

Bread.—With good wheat 2½ *livres* a day is enough. It is recommended that the proportion of sugar should be increased as it is very nourishing. An allowance of onions, garlic and red pepper per 100 men is useful. It serves to make the rations more palatable and assists digestion.

Preparation of Food.—The bread was baked sometimes by the Intendance in field bakeries and sometimes by the troops. Baking by corps is considered only possible during long halts, but generally speaking baking by corps is not advisable. The results are not always satisfactory, and the operation cannot but waste a great portion of the rest which is so valuable in the field.

Hot Meals.—From the day of their departure from Russia, the 35th Division prepared their hot meals in field kitchens on the Brown system. The results were brilliantly successful.

In the lengthy battles of modern war, field kitchens furnish the only possible means of providing hot meals when required. Thanks to this arrangement, hot food was distributed to the Russian soldiers in the fighting line even during the actual progress of the battle.

It is expected that field kitchens will certainly form part of the regimental train in the future on the scale of 20 per a 4-battalion regiment of infantry.

The German translator says that the Russian field kitchen consists of a limbered wagon. The limber carries fuel and uncooked food. The wagon-body contains the cooking apparatus which is capable of dealing with 200 rations.

Forage.—Experience has shown that, provided the change is made gradually, the horse will become accustomed to any kind of substitute for his ordinary forage. The Manchurian cereals, rice, straw, etc., were successfully employed by the Russians in the war.

The regulation rations of wheat and barley were found to be sufficient. Beans, however, were very dangerous and were the cause of much mortality among the horses.

Utilisation of Local Resources.—The 1904 crops having remained in the country, the food problem was much simplified for the Russians. For the first four or five months of 1905 the troops were able to live entirely on the country, and had the system of utilising local resources been better organised, this period might have been prolonged.

The country was not divided up and allotted to the troops. Each unit foraged at its own sweet will, with the result that in some

places there was nothing to be found, while in others the troops did not know what to do with their supplies.

It is absolutely necessary to divide up the country occupied, so as to make the best use of its resources. It is also necessary to fix prices to prevent the inhabitants raising the rates. In Manchuria everything was paid for in ready money at a price arranged at the time of purchase.

Supply Services.—In considering the supply work in this war special conditions should be borne in mind. The enormous distance to European Russia on a single line of rail proved a serious handicap. But generally speaking the supply services bore the strain well.

In these circumstances it was clearly shown that *nothing should be brought up from the rear unless it is absolutely necessary.*

A great deal of avoidable difficulty was experienced by the Russians through the devotion to formalities and red-tape displayed by the supply services. The Russian author lays it down as a principle that corps should be given what they ask for and adjustments made afterwards.

A new system of recruiting the supply services from combatant officers is being brought in. These officers will be given a special course of instruction on the French plan. It is hoped that the proposal will result in considerable improvement in the supply services.

General Remarks.—The Russian system of supply has one fatal defect. Stores are maintained by supply services on the basis of the material from which they are manufactured, *e.g.*, leather goods are stored by the Intendance. This arrangement has obvious inconveniences. For instance, a rifle is supplied by the artillery, but to obtain a sling for it, application must be made to the Intendance.

CHAPTER V.—ENGINEER FIELD MATERIEL

Telephones and Telegraphs.—Telephones rendered excellent service. Experience in the war shows that they should form part of equipment of all arms (staff, regiments, batteries, etc.). Telegraphs, on the other hand, should be reserved for the staff. During the war the want of telephones was much felt. Units of infantry and artillery had none.

Balloons.—A captive balloon for each army corps is recommended. But care should be taken that the matériel is always at hand and in serviceable condition. On one or two occasions ascents had to be abandoned on account of a failure in the supply of gas.

Searchlights.—The Russians made but little use of these in the field, though in Port Arthur they were invaluable. On the other hand, the Japanese searchlights at the Sha-ho were very effective and proved to be a source of considerable annoyance to the Russian working-parties

The February number continues with

PART II.—THE MAN.

The Russians say that despite the retreats after Tienrentchen and Wafangu, the abandonment of the Anjun and Liauchau positions, the expulsion from Liaoyang, the failure of the offensive movement in October, and lastly the evacuation of the strongly fortified positions on the Sha-ho and at Mukden, the troops do not consider themselves beaten.

The soldier bore the stress and strain of the campaign in a most admirable manner. Extreme heat, lack of sleep, actions lasting ten days at a time, nothing shook him. When he had lost all his officers he retired slowly, merely saying he did not know what to do. And to the end he was confident of his superiority over the Japanese.

Well worthy of note is the failure of the reservists. It was found that the men called up were deficient in physique and more deficient in military knowledge. The young soldiers of the active army were incomparably superior in every way.

In this war practically the same charges have been preferred against officer and soldier. Slowness, lack of powers of initiative and decision and the like are attributed to both. The concomitant virtues of unremitting devotion to duty and personal courage are nowhere disputed.

The causes of failure are not far to seek. First, the general standard of education is very low, and secondly, as a natural consequence, military education is defective and lacking in system. The remedies lie in a more thorough education for the people, and a more careful and better organised system of inspections for the soldier.

The changed character of the battle demands a corresponding change in the soldier's qualities. Dash (*éclair*) is of less importance than endurance and obstinacy (*opiniâtreté*). Dash, moreover, is to some extent the child of circumstance, endurance the fruit of training. The foundations of endurance in the field are confidence, respect, and affection for superiors. The soldier should be treated as a man, almost as a child of his officer. Punishment for faults should be prompt and sure, but there should be no lack of sympathy and encouragement in difficulty. A quotation made from the Austria Archduke Jean Salvator in this connection appears worthy of note:—

"From the day of his enlistment the soldier should be looked upon as a man and treated accordingly. The officer should not confine his attention to his bare duty. He should see as much as possible of his men. This will enable him to be always accessible without lowering his dignity or bidding for popularity. He will share in his subordinates' feelings. He will understand the soldier's position, and be careful of his welfare.

Thanks to the close contact engendered by this system, the officer will find no difficulty in becoming acquainted with each

man's individuality. He will be able, without recourse to grandiloquent phrases, to instil into the soldier love of the sovereign and the country, and to create in him the qualities of pride, honour, personal dignity, self-respect, conscience, military spirit and *esprit de corps*. Every possible attempt should be made to ennoble and elevate the soldier's mind. Above all care should be taken to avoid continual blame, better results are obtained by a due recognition of good work than by perpetual fault-finding. It is thus that self-respect and personal dignity, devotion to and love for work are developed. Continual censure deadens all feeling, and leads to the worst of all evils, apathy."

A second point brought to notice by the war is the paucity of officers. The length of modern battles and the heavy losses in officers make this an important question. Especially is this the case in view of the experience that the junior reserve officers (*enseignes de réserve*) and supplementary subalterns (*enseignes suppléants*) are as a rule unfit to fill the places of officers. The reasons are that the former are lacking in *esprit de corps*, and that a moderate knowledge of regulations such as they possess is far from being all that is required; while the latter class are entirely composed of non-commissioned Officers promoted in the field, and consequently their training as officers is insufficient and they have no authority over the men. The remedies proposed are that—

1. Arrangements should be made that on mobilisation a regiment may always possess its full complement of officers (including reserve officers) in addition to any detached for special duties.

2. Care should be taken that officers commanding units are not detailed for special duty.

3. The attractions of the non-combatant services should be reduced. At present these services, in which the risk to life and limb is necessarily considerably less than in fighting troops, offer superior pay and generally more agreeable conditions of service.

4. The reserve ensigns must be given a more thorough and continuous course of military education.

Generally speaking, the remedies may be summed up in one word, *education*, both general and military. It has been abundantly proved in this war that "nowadays the success of operations depends to an enormous extent on the intelligent and purposeful initiative of subordinate commanders."

Failure to grasp the situation on the part of a subordinate may render inoperative the most lofty flights of the chief commander's genius.

The French translator sums up as follows:—

"This review, which breathes good faith, good sense and impartiality in every line is of the greatest interest. Some of the observations made in it are only applicable to the Russian army. But as a whole, the review is applicable to all modern armies in which the component elements would be of such importance in war time.

We cannot refrain from drawing special attention to the following points:—

The transcendent importance of having a sufficient nucleus of men belonging to the active army, for these are the real strength of the mobilised unit.

The difficulty of amalgamating a too great number of reservists with the troops.

The marked inferiority, from the war standpoint, of the oldest classes of reservists.

The notable inadequacy of the training and military education among the reserve officers who are most frequently entirely unfitted to take the place of professional officers.

The necessity for having well organised depôts plentifully provided with good professional officers.

The capital importance of *education* to prepare the soldier and the whole nation for war.

The necessity for more extensive instruction in all grades of the military hierarchy, even the most humble; for in war victory is only obtainable by carrying out the Chief's ideas, the correct conception of which is itself insufficient to ensure the success of the best thought out plans.

The great value of moral factors. These are:—

For the soldier, the sentiment of duty founded on patriotism, love of his superiors, military honour and *esprit de corps*.

For the officer, the sentiment of responsibility and the taste for initiative (the foundation of which is an extended training of all officers), for this is the source of confidence in one's self and in others.

PART III.—TACTICS.

CHAPTER I.—ORGANISATION.

Two points have been prominently brought to notice by the war; the divisional cavalry and the command of the artillery.

Mounted Infantry Scouts.—It was found that the invisibility of modern battle formations and the powerful fire effect of modern weapons made it a necessity that the officer directing the action should himself at all times be able to form an appreciation of the situation. To do this he requires his own special organ of intelligence.

This resulted in the formation of detachments of mounted infantry scouts in each infantry regiment. These proved to be of great value. They frequently carried out all the duties of reconnaissance and security for detached bodies of infantry. They were also attached to Cavalry Divisions, as in Mitchenko's raid.

In default of these mounted infantry scouts the normal requirements of a Division do not exceed two or three squadrons of cavalry.

Command of the Artillery.—This question was very acute at the beginning of the war. Disputes took place as to choice of positions, conduct of fire, targets, tasks to be fulfilled, etc. Later on things settled down, and it was recognised that arguments in the

presence of the enemy are out of place. The real solution of the problem is, however, very simple:—

The man who bears the responsibility should exercise command.

Technical Troops.—One company of engineers per Division proved sufficient.

CHAPTER II.—MANAGEMENT OF TROOPS.

The more complicated the combat becomes, the greater is the influence exercised by the personality of subordinate commanders. Co-ordination in the modern combat is only possible from the standpoint of singleness of purpose, a purpose clearly understood and logically pursued by all.

Precision in orders has given way to definiteness in the tasks to be carried out.

Consequently the following principles are of importance:—

Those who are carrying out the task should be well supplied with information. As regards the immediate neighbourhood the information should be as accurate as possible. All commanders of units should furnish frequent reports of the progress of events in their purview. In addition information as to the whole theatre of war should be provided as far as possible.

Troops arriving in a section already occupied by a large unit (such as a division) should at once report their presence.

The unity of organised bodies, army corps, divisions, etc., should be respected.

Improvised formations are fatal. The French translator explains that the reference is to the Russian practice of grouping for short periods units drawn from different divisions, army corps, etc. It is not intended to mean that if units happen to be thrown together during an action they should refuse to act in harmony.

The work to be carried out must be very clearly defined. This is essential. A small omission by the superior authority not infrequently results in the order being incapable of execution.

Orders will ordinarily take the form of written notes, telegrams, etc.

Verbal transmission of orders in important matters is inadmissible. Should a case occur, however, the recipient of the order must write it down at once and obtain the bearer's signature.

REVIEWS.

THE SCOUTS' ALPHABET is a most handy little volume, which can easily be carried in the waistcoat pocket and the amount of information contained in it is certainly in inverse ratio to its bulk.

The contents are terse and concise, and while a scout, who is new to the work, can see at a glance what is required of him, the trained man will be able, in the shortest possible space of time, to satisfy himself that he has forgotten nothing in his report.

"HINTS ON STABLE MANAGEMENT" is a short and very clearly

*The following corrections should be made in the review of
Salamanca in the July issue:—*

Page 306, last line, *delete* "and after his arrival in Madrid."

Page 307, 4th line, after the word "coast" *add* "see also his despatch to the same person, dated 18th August 1812 after his arrival in Madrid."

In the marginal reference to Napier on page 306 for pages 222-23 read pages 157-58.

carefully revised and brought up to date by Captain Pearson.

The book is eminently practical, and the explanations simple and clearly written; the plates and maps are very well got up; and the new chapter at the end of the book on Military Freehand Sketching will be found very useful and easy to understand.

Tactical Studies, by Major W. Ewbank, R.E.

"This book is an attempt to help Commanding Officers in their work of Tactical Instruction and Students of Tactics." The author has been a D. A. A. G. of Instruction and knows the failings of the general run of officers, and perhaps from this point of view, Chapter IV is the most valuable in the book. The book is well got up, but the pocket for the maps at the end is not strong enough. It would have

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"HINTS ON STABLE MANAGEMENT" is a short and very clearly written little book by Brigadier-General Rimington, which will not only be of value to the young cavalry officer, but to any man with a horse in his stables.

Feed, condition, grooming, shoeing, stables, biting, and general care of the horse are all dealt with in the simplest language, while the hints in Chapter VII contain a small volume of information in themselves.

"MESS MANAGEMENT," by Major L. T. Shadwell, is divided into three parts—housekeeping, mess management, and club management.

The youngster who has suddenly been told off to "run the mess," or the good-natured (though often totally ignorant) man who has been cajoled into "taking over the club," will find endless hints in the last two parts of the book, which may lighten their thankless labours considerably, while the "chota men," fresh from England, bewildered by the daily "hisab," "dasturi," and the marvellously effective "passive resistance" of her husband's servants to her attempts at household reform, will find in the chapter on housekeeping a veritable mine of wisdom.

The book is easy to read, and has many amusing bits, while the description of "chicken cutlets" on page 22 should create a boom in mincing machines!

The most useful and widely read volume by the late General Hutchinson, entitled "MILITARY SKETCHING MADE EASY" has been carefully revised and brought up to date by Captain Pearson.

The book is eminently practical, and the explanations simple and clearly written; the plates and maps are very well got up; and the new chapter at the end of the book on Military Freehand Sketching will be found very useful and easy to understand.

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been a good thing also if the maps had had their numbers marked on the back in some way. There is a great deal of valuable matter in the book—the main portion of which is devoted to tactical schemes with and without solutions. We have gone carefully into a few of the former and do not altogether agree with the author's solutions, but the method of solution is good and students need not actually consider the author's solution as the best way of meeting the case in hand. To take an example or two. In scheme 1, a Brigade is ordered to secure the passages of a river. We hold that this order is not carried out by taking up a position on the near side of the river and bringing fire to bear on the bridges which is what the author practically does do. Again in scheme 2, the Officer Commanding advanced party receives a distinct order from his Brigadier to march one company Mounted Infantry by a certain road. Without any reason given he advances the company by another road. In scheme 4, a convoy is given a march of well over 20 miles to carry out in presence of the enemy, and as half this march is off the map it would have been better to have halted the convoy on the map. If it was intended to halt the convoy before reaching Leyton it would have been a good thing to let the troops know and so save unnecessary movements.

There are various minor matters which require notice. The form of orders requires a little revising to accord with Combined Training, 1905: *e.g.*, the serial number now goes at the heading and the hour of issue at the foot of the orders. "By order" has been done away with, etc.

Officers will undoubtedly find the book of much assistance in passing their examinations.

"The Tactical Training of the Soldier," by Patrol.

In this book the author gives to the public his method of teaching the soldier "the theory of his profession." The author, having tried his system for two years "with such satisfactory results," feels justified in bringing it to notice. His main object throughout is to make the individual soldier take an intelligent interest in his work and so to master his profession that no situation, however difficult, will find him unprepared to meet it.

2. The references throughout the text are to Combined Training, 1903, and Infantry Training, 1902. The book, therefore, requires revision as the later editions of the above books have been considerably altered. There is a good deal of repetition of what is already laid down in the above text-books, but this cannot altogether be helped.

3. To young officers and to those who do not work on any particular system of their own, the book should be of great use, as providing a system on which to commence work. The chapter on signals and communication is perhaps the most interesting. It is a curious fact that on this perhaps the most important part of a soldier's training, so little is laid down in the text-books.

TACTICAL SCHEME COMPETITION, APRIL 1906.

(Republished for information of readers.)

A Red force is advancing eastwards from ABUSIR towards
WORTH. You are in command of the Red
Advanced Guard, strength as per margin.

1 Regiment Cavalry.
4 Companies M. I.

NOTICE.

Tactical Scheme Competition for October 1905, (adjudication appearing in the Journal for July 1905).

It is regretted that certain emendations, necessary to make Map H (not Map G, the latter letter being a printer's error), fit the scheme as set, were not made. The result of this omission has been to render some of the remarks by the Adjudicating Officer pointless. The Council consider, however, the award as made to be correct.

BY "STAND SURE," CAPTAIN H. L. ANDERSON, 9TH BHOPAL
INFANTRY, COMMANDANT, 16TH MULE CADRE.

APPRECIATION.

The enemy has suffered several defeats, so much opposition is unlikely. In May the sun rises at 5-30 A.M. and on the 10th May the moon would be nearly full and on the wane, greatly facilitating an early start. Heights vary between 7,000 and 9,000 feet, so air would be invigorating and men and animals capable of great exertions. Nights will be cold, so greatcoats and a plentiful supply of bedding will be necessary, though tents must be dispensed with. Baggage and followers must be reduced to a minimum. As the first march will be a trying one, none but the fittest men and animals must be taken. My orders are to effect a surprise. This will be a difficult matter, as news spreads rapidly, and it is not easy to conceal movements when

been a good thing also if the maps had had their numbers marked on the back in some way. There is a great deal of valuable matter in the book—the main portion of which is devoted to tactical schemes with and without solutions. We have gone carefully into a few of the former and do not altogether agree with the author's solutions, but the method of solution is good and students need not actually consider the author's solution as the best way of meeting the case in

~~the case in~~ In scheme 1. a Brigade is ordered

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TACTICAL SCHEME COMPETITION, APRIL 1906.

(Republished for information of readers.)

A Red force is advancing eastwards from ABUSIR towards WORTH. You are in command of the Red
1 Regiment Cavalry. Advanced Guard, strength as per margin.
4 Companies M. I. On the evening of the 31st March you
1 Brigade R. F. A. bivouacked in the vicinity of ABBEVILLE.
1 Brigade Infantry.

Next morning at 4 A.M. you receive the following telegram :—

To O. C., Advanced Guard, ABBEVILLE. From C. S. O., Red force, ABUSIR, 31st March, 3-30 A.M.

Spies report that a blue force estimated at an infantry division with 1 regiment cavalry is at WORTH. Stop. We march to GLOSTER to-day. Stop. Advance *via* DAREHAM and GLOSTER and secure the passages of the ITCHEN.

Advancing in accordance with the above orders you meet hostile cavalry patrols on the line DOWNS HOUSE—DOON TOWN, which retire before you. On passing the eastern end of GLOSTER your vanguard cavalry comes under artillery fire from the east of the ITCHEN. Friendly inhabitants inform you that the bridges over the ITCHEN were intact this morning and that a small force of one battery, some cavalry, and some infantry has just arrived on the east bank of the River ITCHEN from the direction of WORTH.

REQUIRED—As Staff Officer to the G. O. C. you will write—

- (1) An appreciation of the situation (for his use).
- (2) The orders which would be issued.

TACTICAL SCHEME COMPETITION, JANUARY 1906.

BY "STAND SURE," CAPTAIN H. L. ANDERSON, 9TH BHOPAL INFANTRY, COMMANDANT, 16TH MULE CADRE.

APPRECIATION.

The enemy has suffered several defeats, so much opposition is unlikely. In May the sun rises at 5-30 A.M. and on the 10th May the moon would be nearly full and on the wane, greatly facilitating an early start. Heights vary between 7,000 and 9,000 feet, so air would be invigorating and men and animals capable of great exertions. Nights will be cold, so greatcoats and a plentiful supply of bedding will be necessary, though tents must be dispensed with. Baggage and followers must be reduced to a minimum. As the first march will be a trying one, none but the fittest men and animals must be taken. My orders are to effect a surprise. This will be a difficult matter, as news spreads rapidly, and it is not easy to conceal movements when

villages are met with and commanding heights available. The enemy must be deceived and the object of the march concealed and a different objective given out. It will be necessary to get as near MAZALDIN as possible so as to surprise it the following morning. A detour north or south of the MANAI and DARRA ALGADS would take too long and I doubt if any greater surprise would be possible. CHAPRAI and adjacent villages would soon give warning of a northern detour. A detour from the south would be easier from KANDIGRAM and evidently the General Officer Commanding did not intend this. I therefore select the most direct route west of the DARRA and MANAI ALGADS; the slopes are easy except at LARE and MAIDANI NARAI, and the rate of marching should average about 2½ miles an hour. The mule road *via* MAIDANI NARAI could be utilized for Transport, the Suppers and Mincers making a crossing if necessary over the DARRA ALGAD about 2 miles South East of LARE NARAI.

I assume I get my orders at 9 A.M. on the 10th May.

PLAN OF ACTION.

1. Give out objective DAHAR (MIAMI).
2. March *via* LARE and MAIDANI NARAI as far as where the footpath meets the mule road at the 11th ALGAD East of MANAI KACH—thence across country to a point about 1 mile North-East of GULMAR KOT and halt there for the night. Distance from MAKIN about 16 miles, which with slight opposition I should reach about 1 P.M., starting at 5 A.M.
3. Make for MAZALDIN next morning distant about 4 miles.
4. Reduce transport and followers to a minimum and take only fittest men and animals. SUSSEX Regiment, 600 rifles, Native Regiments, 500 rifles, each exclusive of signallers. Take no Field Hospitals.

PRELIMINARY ORDERS.

No. I.—Operation Orders by Col. X. Commanding Column.

MAKIN, 10th May 1906

1. The troops as per margin will be ready to start at 5 A.M. tomorrow for DAHAR (MIAMI) halting for the night near GULMAR KOT. The strength of Infantry Regiments is exclusive of signallers.
2. Tents and 2nd reserve ammunition will not be taken. O.C.s must consult the D.A.A. G.O.s to see if baggage, servants, etc. which has been referred to a minimum.
3. Note that the fittest men and animals must be taken.
4. Men will carry one days rations besides emergency rations. Followers two days rations. Animals two days grain in addition to loads.

1 Coy S & M.		
No. 1 M B		
1st Sussex Regt	600	
rifles		
1st N I	500 rifles	
2nd N I	500 ..	
Gurkha Scouts	100	
rifles		
Hospital riding mules		
50		

5. Indents for baggage will be submitted to the Brigade Transport Officer as soon as possible.

6. Further orders will follow.

Time—9-30 A.M.

J. KELLY, MAJOR,
Staff Officer.

N.B.—The scale as shewn in my detail of Transport would have been given to the D. A. A. G.

No. II.—Operation Orders by Col. X. Commanding Column.

MAKIN, 10th May 1906.

1. The enemy has been defeated and has fled to the Hills and Valleys west of MAKIN and KANIGURAM. He is also reported to be holding DABAR (MIAMI), the capture of which place is most important. KANIGURAM is held by us.

A. G.
C. O. Col. Jones, 1st N. I.
Gurkha Scouts.
1st N. I.
No. 3 M. B.
Coy. S. & M.
M. B. in order of March.
1st Sussex Regt.
Baggage in order of
units.
Rear Guard.
C. O. Col. Brown, 2nd N. I.
2nd N. I.

2. The column, as per margin, will march to-morrow for the capture of DABAR (MIAMI), halting for the night near GULMAR KOT.

3. The Advanced Guard will be clear of the camp by 5 A.M. and proceed *via* the DARRA ALGAD-LARE NARAI and MAIDANI NARAI.

On reaching the track about 2 miles east of MANAI KACH, it will change direction South-West and move on a point about 1 mile North-East of GULMAR KOT. The M. B. will follow at 300 yards distance.

4. The Sappers and Miners will prepare a crossing for the Transport to move across the DARRA ALGAD by the mule road on MAIDANI NARAI.

5. The Senior Medical Officer will arrange for the distribution of the riding mules.

6. The Supply Officer will accompany the A. G.

7. There will be a halt of 1 hour when the M.B. reaches the LARAI NARAI, MAIDANI NARAI heights.

8. The O. C., Column, will be at the head of the M.B.

Time—12 Noon.

Copies to O. Cs., units.

J. KELLY, MAJOR,
Staff Officer.

No. III.—Operation Orders by Col. X. Commanding Column.

BIVOUAC N. E. OF GULMAR KOT, 11th May 1906.

1. The column will be ready to march on DABAR (MIAMI) at 4-45 A.M. to-morrow when detailed orders will be issued.

2. The baggage will not be loaded till ordered.

Time—5-30 P.M.

Copies issued to O. Cs., units.

J. KELLY, MAJOR,
Staff Officer.

N.B.—O.C. would be told confidentially the intended operations for the next day.

Outposts as for Hill Warfare, would be put out on arrival at BIVOUAC. The scheme does not appear to call for these.

No. IV.—Operation Orders by Col. X. Commanding Column

BIVOUAC N. E. OF GULMAR KOI, 12th May 1906

1. The enemy has a Rifle and Ammunition Factory at MAZALDIN.
2. The column will surprise MAZALDIN, destroy the manufacturing plant and endeavour to capture the workmen. The march on DARAR (MIAMI) is now cancelled.

3. The scouts will proceed at once the shortest way *via* WALKAKI to the west of MAZALDIN and cut off the enemy's retreat in that direction.

4. The *right column*.—Four companies Sussex Regiment, under Colonel Tribe will advance about $\frac{1}{2}$ mile north of WARZAKAI north Pass, then strike south-west on MAZALDIN and cut off enemy's retreat to the north.

5. The *left column*.—Four companies 1st N. I., under Colonel Jones will advance about $\frac{1}{2}$ mile south of WARZAKAI north Pass—then strike north-east on MAZALDIN and cut off retreat to the south.

6. The Sappers and Miners will follow the left column north.

7. Two companies Sussex Regiment and one company 1st N. I. will form a General Reserve and together with No. 3 M. B. will proceed to WARZAKAI north Pass.

8. The 2nd N. I. will remain as escort to the baggage and will at once relieve the pickets of the Sussex Regiments and 1st N. I. which will be fold off to the Reserve.

9. Signalling must be kept up between units, and secrecy as much as possible observed.

10. The O. C. Column will be with the General Reserve.

Time = 4.45 A. M.

J. KELLY, MAJOR

Dictated to

Staff Officer,

assembled officers.

Note.—I assume that the Sussex Regiment and 1st N. I. have each been given an out-post duty. Those who remain will be part of the Gen. Reserve & staff.

"STAND-STATE"

TRANSPORT REQUIRED

Half Company Sappers and Miners

		M. B. S.		Total
		Obligatory.	Baggage.	
Greatcoats and ammunition	...	5	...	...
Kettles	...	1	...	...
Pouches	...	1	...	...
Engineer equipment	...	16	...	...
Medical	...	2	...	...
Reserve rations	...	1	...	...

		Mules.		Total
		Obligatory.	Baggage.	Mules.
<i>Baggage.</i>		lbs.		
2 B. OS.	at 40 lbs. each	80	...	...
1 B. N. C. O.	" 20 " "	20	...	...
2 N. OS.	" 15 " "	30	...	...
94 R. and F., etc.	" 15 " "	1,410	...	...
4 Private followers	" 10 " "	40	...	...
9 Public	" 10 " "	90	...	...
		1,670	11	...
Total		...	11	...
Add spare	...	3	1	...
Add to complete file of 3 mules	...	1	...	...
		30	12	42

Native Mountain Battery.

Ammunition	...	20	...	...
Hospital establishment	...	2	...	...
Miscellaneous, say about $\frac{1}{3}$	...	8	...	...
<i>Baggage.</i>		lbs.		
4 B. OS.	at 40 lbs. each	160	...	...
3 N. OS.	" 15 " "	45	...	...
80 N.-C. and men	" 15 " "	1,200	...	...
120 Drivers	" 15 " "	1,800	...	...
50 Followers	" 10 " "	500	...	...
10 Private followers	" 10 " "	100	...	...
		3,805	24	...
Reserve rations	...	3	...	...
		57	...	...
Add 10 per cent spare	...	6	...	...
		63	...	63

1st Sussex Regiment

600 greatcoats at $5\frac{3}{4}$ lbs. each, 3,450 lbs.	22	...	...
Section Ammunition Reserve	36	...	...
Entrenching tools	6	...	...
Kajawahs	2	...	...
Pakhals	12	...	...
Cooking pots	7	...	...
Medical equipment	6	...	...
Signalling	4	...	...
Reserve rations	6	...	...

villages are met with and commanding heights available. The enemy must be deceived and the object of the march concealed and a different objective given out. It will be necessary to get as near MAZALDIN as possible so as to surprise it the following morning. A detour north or south of the MANAI and DARRA ALGADS would take too long and I doubt if any greater surprise would be possible. CHAPRAI and adjacent villages would soon give warning of a northern detour. A detour from the south would be easier from KANIGRAM and evidently the General Officer Commanding did not intend this. I therefore select the most direct route west *i.e.* the DARRA and MANAI ALGADS, the slopes are easy except at LARE and MAIDANI NARAI and the rate of marching should average about 2½ miles an hour. The mule road *i.e.* MAIDANI NARAI could be utilized for Transport, the Suppers and Miners making a crossing if necessary over the DARRA ALGAD about 2 miles South East of LARE NARAI.

I assume I get my orders at 9 A.M. on the 10th May.

PLAN OF ACTION.

1. Give out objective DARAR (MIAMI).
2. March *i.e.* LARE and MAIDANI NARAI as far as where the footpath meets the mule road at the 11th ALGAD East of MANAI KACH—thence across country to a point about 1 mile North-East of GULMAR Kot and halt there for the night. Distance from MAKIN about 16 miles, which with slight opposition I should reach about 1 P.M., starting at 5 A.M.
3. Make for MAZALDIN next morning distant about 4 miles.
4. Reduce transport and followers to a minimum and take only fittest men and animals. Sussex Regiment 600 rifles, Native Regiments 500 rifles, each exclusive of signallers. Take no Field Hospitals.

PRELIMINARY ORDERS.

No. I.—Operation Orders by Col. X. Commanding Column.

MAKIN, 10th May 1906

1. The troops as per margin will be ready to start at 5 A.M. tomorrow for DARAR (MIAMI) halting for the night near GULMAR Kot. The strength of Infantry Regiments is exclusive of signallers.
2. Bents and 2nd reserve ammunition will not be taken. O.C.s must consult the D.A.A.G. as to size of baggage, servants, etc. which has been reduced to a minimum.
3. Note that the fittest men and animals must be taken.
4. Men will carry one day's rations besides emergency rations. Followers two days' rations. Animals two days' grain in addition to loads.

1 Coy B & M.	
No. 1 M B	
1st Sussex Regt	600
rifles	
1st N I	500 rifles
2nd N I	500
Gurkha Scouts	100
rifles	
Hospital riding mules	
50	

5. Indents for baggage will be submitted to the Brigade Transport Officer as soon as possible.

6. Further orders will follow.

Time—9-30 A.M.

J. KELLY, MAJOR,
Staff Officer.

N.B.—The scale as shewn in my detail of Transport would have been given to the D. A. A. G.

No. II.—Operation Orders by Col. X. Commanding Column.

MAKIN, 10th May 1906.

1. The enemy has been defeated and has fled to the Hills and Valleys west of MAKIN and KANIGURAM.

A. G.
C. O. Col. Jones, 1st N. I.
Gurkha Scouts.
1st N. I.
No. 3 M. B.
Coy. S. & M.
M. B. in order of March.
1st Sussex Regt.
Baggage in order of
units.
Bear Guard.
C.O. Col. Brown, 2nd N.I.
2nd N. I.

He is also reported to be holding DABAR (MIAMI), the capture of which place is most important. KANIGURAM is held by us.

2. The column, as per margin, will march to-morrow for the capture of DABAR (MIAMI), halting for the night near GULMAR KOT.

3. The Advanced Guard will be clear of the camp by 5 A.M. and proceed *via* the DARRA ALGAD-LARE NARAI and MAIDANI NARAI.

On reaching the track about 2 miles east of MANAI KACH, it will change direction South-West and move on a point about 1 mile North-East of GULMAR KOT. The M. B. will follow at 300 yards distance.

4. The Sappers and Miners will prepare a crossing for the Transport to move across the DARRA ALGAD by the mule road on MAIDANI NARAI.

5. The Senior Medical Officer will arrange for the distribution of the riding mules.

6. The Supply Officer will accompany the A. G.

7. There will be a halt of 1 hour when the M.B. reaches the LARAI NARAI, MAIDANI NARAI heights.

8. The O. C., Column, will be at the head of the M.B.

Time—12 Noon.

Copies to O. Cs., units.

J. KELLY, MAJOR,
Staff Officer.

No. III.—Operation Orders by Col. X. Commanding Column.

BIVOUAC N. E. OF GULMAR KOT, 11th May 1906.

1. The column will be ready to march on DABAR (MIAMI) at 4-45 A.M. to-morrow when detailed orders will be issued.

2. The baggage will not be loaded till ordered.

Time—5-30 P.M.

Copies issued to O. Cs., units.

J. KELLY, MAJOR,
Staff Officer.

N.B.—O.C. would be told confidentially the intended operations for the next day.

Outposts as for Hill Warfare would be put out on arrival at BIVOUAC. The scheme does not appear to call for these.

No. IV.—Operation Orders by Col. X. Commanding Column

BIVOUAC N. E. OF GULMAR KOT, 12th May 1906

1. The enemy has a Rifle and Ammunition Factory at MAZALDIN.
2. The column will surprise MAZALDIN, destroy the manufacturing plant and endeavour to capture the workmen. The march on DABAR (MIAMI) is now cancelled.

3. The scouts will proceed at once the shortest way *via* WALEKAI to the west of MAZALDIN and cut off the enemy's retreat in that direction.

4. The *right column*—Four companies Sussex Regiment, under Colonel Tribe will advance about $\frac{1}{2}$ mile north of WARZAKAI north Pass, then strike south-west on MAZALDIN and cut off enemy's retreat to the north.

5. The *left column*—Four companies 1st N. I., under Colonel Jones will advance about $\frac{1}{2}$ mile south of WARZAKAI north Pass—then strike north-east on MAZALDIN and cut off retreat to the south.

6. The Sappers and Miners will follow the left column north.

7. Two companies Sussex Regiment and one company 1st N. I. will form a General Reserve and together with No. 3 M. B. will proceed to WARZAKAI north Pass.

8. The 2nd N. I. will remain as escort to the baggage and will at once relieve the pickets of the Sussex Regiments and 1st N. I. which will be told off to the Reserve.

9. Signalling must be kept up between units, and secrecy as much as possible observed.

10. The O. C. Column will be with the General Reserve.

Time—4.45 A. M.

J. KELLY, MAJOR,

Dictated to

Staff Officer,

assembled officers.

Note—I assume that the Sussex Regiment and 1st N. I. have each one company out at duty. Those who remain will complete the General Reserve strength.

"STAND STILL"

TRANSPORT REQUIRED

Half Company of Sappers and Miners

		Mules		Total
		Obligatory	Baggage	
Grain, oats and ammunition	...	5	...	...
Kettles, etc.	...	1	...	...
Pack-boys	...	1	...	...
Engineer equipment	...	16	...	...
Medical	...	2	...	...
Reserve mules	...	1	...	...

		Mules.		Total
		Obligatory.	Baggage.	Mules.
<i>Baggage.</i>		lbs.		
2 B. OS.	at 40 lbs. each	80	...	...
1 B. N. C. O.	" 20 " "	20	...	...
2 N. OS.	" 15 " "	30	...	...
94 R. and F., etc.	" 15 " "	1,410	...	...
4 Private followers	" 10 " "	40	...	...
9 Public	" 10 " "	90	...	...
		1,670	11	...
Total		...	11	...
Add spare	...	3	1	...
Add to complete file of 3 mules	...	1	...	...
		30	12	42

Native Mountain Battery.

Ammunition	...	20	...	...
Hospital establishment	...	2	...	...
Miscellaneous, say about $\frac{1}{3}$	...	8	...	...
<i>Baggage.</i>		lbs.		
4 B. OS.	at 40 lbs. each	160	...	...
3 N. OS.	" 15 " "	45	...	...
80 N.-C. and men	" 15 " "	1,200	...	...
120 Drivers	" 15 " "	1,800	...	...
50 Followers	" 10 " "	500	...	...
10 Private followers	" 10 " "	100	...	...
		3,805	24	...
Reserve rations	...	3	...	...
		57	...	...
Add 10 per cent spare	...	6	...	...
		63	...	63

1st Sussex Regiment

600 greatcoats at $5\frac{3}{4}$ lbs. each,	3,450 lbs.	22	...	...
Section Ammunition Reserve	...	36	...	...
Entrenching tools	...	6	...	...
Kajawahs	...	2	...	...
Pakhals	...	12	...	...
Cooking pots	...	7	...	...
Medical equipment	...	6	...	...
Signalling	...	4	...	...
Reserve rations	...	6	...	...

<i>Baggage.</i>	Mules,		Total Mules.
	Obligatory, lbs.	Baggage.	
20 Officers at 40 lbs. each	800	...	..
600 R. & F. " 20 " "	12 000	...	...
30 Public followers " 10 " "	300	...	..
20 Private " " 10 " "	200	84	...
	13 300	101	84
Add 10 per cent	...	10	8
Add to complete file of 3 mules	...	1	...
	111	93	204
GRAND TOTAL			309

1st Native Infantry.

511 Greatcoats at 4½ lbs. each	...	15	...
Section Ammunition Reserve	...	36	...
Entrenching tools	...	6	...
Kapawads	...	2	...
Water gear	...	6	...
Cooking pots	...	6	...
Medical Equipment	...	6	...
Signaling	...	4	...
Reserve rations	...	6	...

<i>Baggage.</i>	lbs.			
10 B. O. S. at 40 lbs. each	400	...	...	...
511 N. O. S. R. and F. 15 " "	7 625	...	...	...
20 Public followers 10 " "	200	...	...	...
16 Private " " 10 " "	160	...	...	...
	8 425	...	53	...
	87	...	53	...
Add 10 per cent. spare	...	8	5	...
Add to complete file of 3 mules	...	1	2	...

Starch, say	...	...	6
Gurkha shorts	...	...	3
101 Greatcoats at 4½ lbs. each	...	...	1
Cooking pots	...	...	...

<i>Baggage.</i>	lbs.			
1 B. O.	40	...	...
1 N. O.	15	...	...
100 R. & F.	1 500	10	...
		1555	14	...
Add spare		1	...
			15	15

1486

			Mules.
For 2nd Native Infantry Regiment as above	...	...	156
Add riding mules, say	...	...	50
	GRAND TOTAL	...	692
For convenience of calculation, say	...	...	700

Length of column.

Infantry in file—Transport single file, etc., as the Gurkha scouts will be well ahead I have not considered them in length of column.

		Yds.	
	Van Guard, 2 Coys, Sussex Regt.	100	at 1 yard per file.
	Distance	...	100
A. G.	Main Guard, 4 Coys, Sussex Regt.	200	
	No. 3 M. B.	...	400
	$\frac{1}{2}$ Coy. Sappers and Miners	...	100
	Distance	...	300
M. B.	1st Native Infantry	...	250
	Baggage	...	2,100 at 3 yards per mule.
	400 of 2nd Native Infantry	...	200
R. G.	Distance	...	200
	100 of 2nd Native Infantry	...	50
Add for 36 Machine-Gun mules	...	108	
		4,108	
Add 20 per cent for opening out	...	820	
		4,928	

Total length equals roughly about 3 miles.

REMARKS BY ADJUDICATING OFFICER.

The adjudication of the best solution in January's competition has proved no easy task; 20 solutions were received, and several of them are almost of equal merit.

The problem would not be an easy one in actual warfare, and all officers will agree that the chances against complete success would be considerable. The scheme was, however, intended to give an example of the problem presented to a staff officer to the O. C. a flying column during the late operations in WAZIRISTAN. There seems no doubt that MAZALDIN is too far off to admit of a surprise at the end of a long night march. A night march over rocky ground is very fatiguing and the distance seems prohibitive. Most of the solvers are agreed that the only possibility to get within striking distance of MAZALDIN at the end of the first march and to trust to deceiving the enemy as to the real objective. Some solvers go the length of suggesting that the troops at MAKIM and KANIGURAM should be utilized for the purpose of deceiving the enemy still further by feints. For purposes of schemes it is absolutely necessary to work on the "data" given. On service it might be possible to persuade the G. O. C. that a little extra assistance would be beneficial;

but then again the G. O. C. might have good reasons for refusing that assistance. On paper, therefore, it is wiser to confine oneself strictly to the material placed at one's disposal.

Several solvers failed to grasp the scheme. One solver commences with the assumption that "no date being given, he can select his own time of year."

The date was carefully given in the scheme, as the operation would only be possible at certain seasons of the year. Several solvers omit to note the fact that they were asked to place themselves in the position of a "Staff Officer to Colonel X."

In the winning solution by "Stand Sure" the method of surrounding the village seems open to criticism. It would appear wiser to move on WARZAKAI NARAI in a concentrated force, and then to arrange for surrounding the village. Night marches across country are always difficult, while the more numerous the columns and the longer the distance to cover, the greater the danger of failure. As WARZAKAI NARAI is one mile from the village, it would almost seem possible to use it as a place of assembly from which the various columns might be diverted so as to be in position before dawn. The risk of premature discovery would appear no greater than with several columns blundering across country in the dark, while the chances of columns going astray or failing to keep to their timings would be lessened.

PRECIS OF FOREIGN MILITARY JOURNALS.

FRENCH PAPERS.

By CAPTAIN W. L. J. CAREY, R.A.

REVUE MILITAIRE SUISSE.

New Rifle Bullets.

The May number provides an excellent survey of the stage of development at which the modern rifle cartridge has arrived. The ballistics of the rifle have been hitherto developed on the lines of an increase to the initial velocity of the bullet. And the weight of this latter has been kept as high as possible, with the object of obtaining the density of transverse section necessary to maintain a sufficient reserve of energy at long ranges. Of two projectiles of the same calibre, and fired with the same initial velocity, but of different weights, it is evident that the heavier represents the greater momentum; the energy lost in overcoming the same resistance represents a smaller portion of the initial energy, consequently the velocity decreases less rapidly, and therefore the range is greater than that of the lighter projectile.

The sectional density—*i.e.*, the weight per square centimetre of the transverse section—gradually increased from the 20 *grammes* of the muzzle-loader to the 31 *grammes* of the modern breech-loader with smokeless powder. Moreover, since the total weight of the projectile is an important factor in the force of recoil (which must be kept within certain limits to avoid affecting the accuracy of fire), the increase of sectional density of necessity led to a decrease of calibre, which came down from 11 *mm.* to about 8 *mm.* in most of the European armies.

Following the same plan, in some countries better results have been sought by decreasing down to 6.5 *mm.* with a muzzle velocity of 730 *m.* And as a matter of fact these rifles give better ballistics than the 8 *mm.* calibres with 620 *m.* initial velocity. But to adopt a new calibre, and consequently a new rifle is a matter of considerable financial importance. Endeavours have therefore been made first in France, and then in Germany, to improve the ballistic results by merely altering the projectile and the propellant, without altering the rifle, except for the sights and cartridge chamber.

The new type of cartridge termed the "*balle D*" in France and the "*cartouche S*" in Germany doubtless denotes a state of transition (perhaps preceding the automatic rifle, or a new propellant). But it must be said that it has given a much greater dangerous zone at decisive ranges, although both weight and sectional density have been decreased. This is only an apparent paradox. Actually, the advantage is obtained from the greater initial energy, which is so large

villages are met with and commanding heights available. The enemy must be deceived and the object of the march concealed and a different objective given out. It will be necessary to get as near MAZALDIN as possible so as to surprise it the following morning. A detour north or south of the MANAI and DARRA ALGADS would take too long and I doubt if any greater surprise would be possible. CHAPRAI and adjacent villages would soon give warning of a northern detour. A detour from the south would be easier from KANIGGRAM and evidently the General Officer Commanding did not intend this. I therefore select the most direct route west *viâ* the DARRA and MANAI ALGADS; the slopes are easy except at LARE and MAIDANI NARAI, and the rate of marching should average about 2½ miles an hour. The mule road *via* MAIDANI NARAI could be utilized for Transport, the Sappers and Miners making a crossing if necessary over the DARRA ALGAD about 2 miles South-East of LARE NARAI.

I assume I get my orders at 9 A.M. on the 10th May.

PLAN OF ACTION.

1. Give out objective DAHAR (MIAMI).
2. March *viâ* LARE and MAIDANI NARAI as far as where the footpath meets the mule road at the "1" in ALGAD East of MANAI KACH—thence across country to a point about 1 mile North-East of GULMAR KOT and halt there for the night. Distance from MAKIN about 16 miles, which with slight opposition I should reach about 1 P.M., starting at 5 A.M.
3. Make for MAZALDIN next morning, distant about 4 miles.
4. Reduce transport and followers to a minimum and take only fittest men and animals. Sussex Regiment 600 rifles, Native Regiments 500 rifles, each exclusive of signallers. Take no Field Hospitals.

PRELIMINARY ORDERS.

No. I.—Operation Orders by Col. X. Commanding Column.

MAKIN, 10th May 1906.

1. The troops as per margin will be ready to start at 5 A.M. to-morrow for DABAR (MIAMI), halting for the night near GULMAR KOT. The strength of Infantry Regiments is exclusive of signallers.

1 Coy. S. & M.	
No. 3 M. B.	
1st Sussex Regt.	600
rifles	
1st N. I.	500 rifles.
2nd N. I.	500 "
Gurkha Scouts	100
rifles.	
Hospital riding mules	
50.	

 2. Tents and 2nd reserve ammunition will not be taken. O. Cs. units will consult the D. A. A. G. as to scale of baggage, servants, etc., which has been reduced to a minimum.
 3. None but the fittest men and animals must be taken.
4. Men will carry one day's rations, besides emergency rations. Followers two days' rations. Animals two days' grain in addition to loads.

5. Indents for baggage will be submitted to the Brigade Transport Officer as soon as possible.

6. Further orders will follow.

Time—9-30 A.M.

J. KELLY, MAJOR,
Staff Officer.

N.B.—The scale as shewn in my detail of Transport would have been given to the D. A. A. G.

No. II.—Operation Orders by Col. X. Commanding Column.

MAKIN, 10th May 1906.

1. The enemy has been defeated and has fled to the Hills and Valleys west of MAKIN and KANIGURAM.

A. G.
C. O. Col. Jones, 1st N. I.
Gurkha Scouts.
1st N. I.
No. 3 M. B.
1 Coy. S. & M.
M. B. in order of March.
1st Sussex Regt.
Baggage in order of
units.
Rear Guard.
C. O. Col. Brown, 2nd N. I.
2nd N. I.

He is also reported to be holding DABAR (MIAMI), the capture of which place is most important. KANIGURAM is held by us.

2. The column, as per margin, will march to-morrow for the capture of DABAR (MIAMI), halting for the night near GULMAR KOT.

3. The Advanced Guard will be clear of the camp by 5 A.M. and proceed *via* the DARRA ALGAD-LARE NARAI and MAIDANI NARAI.

On reaching the track about 2 miles east of MANAI KACH, it will change direction South-West and move on a point about 1 mile North-East of GULMAR KOT. The M. B. will follow at 300 yards distance.

4. The Sappers and Miners will prepare a crossing for the Transport to move across the DARRA ALGAD by the mule road on MAIDANI NARAI.

5. The Senior Medical Officer will arrange for the distribution of the riding mules.

6. The Supply Officer will accompany the A. G.

7. There will be a halt of 1 hour when the M.B. reaches the LARAI NARAI, MAIDANI NARAI heights.

8. The O. C., Column, will be at the head of the M.B.

Time—12 Noon.

Copies to O. Cs., units.

J. KELLY, MAJOR,
Staff Officer.

No. III.—Operation Orders by Col. X. Commanding Column.

BIVOUAC N. E. OF GULMAR KOT, 11th May 1906.

1. The column will be ready to march on DABAR (MIAMI) at 4-45 A.M. to-morrow when detailed orders will be issued.

2. The baggage will not be loaded till ordered.

Time—5-30 P.M.

Copies issued to O. Cs., units.

J. KELLY, MAJOR,
Staff Officer.

N.B.—O.C. would be told confidentially the intended operations for the next day.

Outposts as for Hill Warfare would be put out on arrival at BIVOUAC. The scheme does not appear to call for these.

No. IV.—Operation Orders by Col. X. Commanding Column.

BIVOUAC N. E. OF GULMAR KOT, 12th May 1906.

1. The enemy has a Rifle and Ammunition Factory at MAZALDIN.
2. The column will surprise MAZALDIN, destroy the manufacturing plant and endeavour to capture the workmen. The march on DABAR (MIAMI) is now cancelled.

3. The scouts will proceed at once the shortest way *viâ* WALEKAI to the west of MAZALDIN and cut off the enemy's retreat in that direction.

4. The *right column*—Four companies Sussex Regiment, under Colonel Tribe will advance about $\frac{1}{2}$ mile north of WARZAKAI north Pass—then strike south-west on MAZALDIN and cut off enemy's retreat to the north.

5. The *left column*—Four companies 1st N. I., under Colonel Jones will advance about $\frac{1}{2}$ mile south of WARZAKAI north Pass—then strike north-east on MAZALDIN and cut off retreat to the south.

6. The Sappers and Miners will follow the left column north.

7. Two companies Sussex Regiment and one company 1st N. I. will form a General Reserve and together with No. 3 M. B. will proceed to WARZAKAI north Pass.

8. The 2nd N. I. will remain as escort to the baggage and will at once relieve the piquets of the Sussex Regiments and 1st N. I. which will be told off to the Reserve.

9. Signalling must be kept up between units, and secrecy as much as possible observed.

10. The O. C. Column will be with the General Reserve.

Time—4.45 A. M.

J. KELLY, MAJOR,
Staff Officer.

Dictated to
assembled officers.

N.B.—I assume that the Sussex Regiment and 1st N. I. have each one company on outpost duty. These, when relieved, become part of General Reserve as stated.

“STAND SURE.”

TRANSPORT REQUIRED.

Half-Company Sappers and Miners.

		Mules.		Total.
		Obligatory.	Baggage.	Mules.
Greatcoats and ammunition	...	5	...	...
Kajawahs	...	1	...	...
Pakhals	...	1	...	...
Engineer equipment	...	16	...	...
Medical	...	2	...	...
Reserve rations	...	1	...	...

		Mules.		Total
		Obligatory.	Baggage.	Mules.
<i>Baggage.</i>		lbs.		
2 B. OS.	at 40 lbs. each	80	...	...
1 B. N. C. O.	" 20 " "	20	...	...
2 N. OS.	" 15 " "	30	...	...
94 R. and F., etc.	" 15 " "	1,410	...	...
4 Private followers	" 10 " "	40	...	...
9 Public	" 10 " "	90	...	...
		1,670	11	...
Total		26	11	...
Add spare	...	3	1	...
Add to complete file of 3 mules	...	1	...	...
		30	12	42

Native Mountain Battery.

Ammunition	...	20	...	...
Hospital establishment	...	2	...	...
Miscellaneous, say about $\frac{1}{3}$	...	8	...	...
<i>Baggage.</i>		lbs.		
4 B. OS.	at 40 lbs. each	160	...	...
3 N. OS.	" 15 " "	45	...	...
80 N.-C. and men	" 15 " "	1,200	...	...
120 Drivers	" 15 " "	1,800	...	...
50 Followers	" 10 " "	500	...	...
10 Private followers	" 10 " "	100	...	...
		3,805	24	...
Reserve rations	...	3	...	...
		57	...	...
Add 10 per cent spare	...	6	...	...
		63	...	63

1st Sussex Regiment

600 greatcoats at $5\frac{3}{4}$ lbs. each,	3,450 lbs.	22	...	...
Section Ammunition Reserve	...	36	...	...
Entrenching tools	...	6	...	...
Kajawahs	...	2	...	...
Pakhals	...	12	...	...
Cooking pots	...	7	...	...
Medical equipment	...	6	...	...
Signalling	...	4	...	...
Reserve rations	...	6	...	...

				Mules.		Total
				Obligatory.	Baggage.	Mules.
<i>Baggage.</i>				lbs.		
20 Officers	at 40 lbs. each	800	...	...	...	...
600 R. & F.	" 20 " "	12,000	...	...	...	...
30 Public followers	" 10 " "	300	...	...	...	...
20 Private	" " 10 " "	200	...	...	84	...
				13,300	101	84
Add 10 per cent	...	...	10	8	...	...
Add to complete file of 3 mules	...	...	...	1	...	...
				111	93	204
				GRAND TOTAL	...	309
<i>1st Native Infantry.</i>						
511 Greatcoats	at 4½ lb. each	...	15	...	...	...
Section Ammunition Reserve	...	...	36	...	...	...
Entrenching tools	...	...	6	...	...	...
Kajawahs	...	...	2	...	...	...
Water gear	...	...	6	...	...	...
Cooking pots	...	...	6	...	...	...
Medical Equipment	...	...	6	...	...	...
Signalling	...	...	4	...	...	...
Reserve rations	...	...	6	...	...	...
<i>Baggage.</i>				lbs.		
10 B. Os.' at	40 lbs. each	400	...	...	...	...
511 N. Os.' R. and F.	15 " "	7,665	...	...	...	...
20 Public followers	10 " "	200	...	...	...	...
16 Private	" 10 " "	160	...	...	...	...
				8,425	53	...
				87	53	...
Add 10 per cent spare	...	...	8	5	...	...
Add to complete file of 3 mules	...	...	1	2	...	...
				96	60	156
Staff, say,	...	...	...	...	...	6
Gurkha scouts	...	...	...	...	3	...
101 Greatcoats	at 4½ lbs. each	...	...	...	1	...
Cooking pots.	...	...	...	...	...	...
<i>Baggage.</i>				lbs.		
1 B. O.	...	40	...	...	...	...
1 N. O.	...	15	...	...	...	...
100 R. & F.	...	1,500	...	...	10	...
				1555	14	...
Add spare	...	...	...	1	...	...
				...	15	15
						486

				Mules.
For 2nd Native Infantry Regiment as above	...	...	...	156
Add riding mules, say	...	...	...	50
		GRAND TOTAL	...	692
For convenience of calculation, say	...	...	...	700

Length of column.

Infantry in file—Transport single file, etc., as the Gurkha scouts will be well ahead I have not considered them in length of column.

			Yds.	
	{	Van Guard, 2 Coys, Sussex Regt.	100	at 1 yard per file.
	{	Distance	...	100
A. G.	{	Main Guard, 4 Coys, Sussex Regt.	200	
	{	No. 3 M. B.	...	400
	{	½ Coy. Sappers and Miners	...	100
	{	Distance	...	300
M. B.	{	1st Native Infantry	...	250
	{	Baggage	...	2,100 at 3 yards per mule.
	{	400 of 2nd Native Infantry	...	200
R. G.	{	Distance	...	200
	{	100 of 2nd Native Infantry	...	50
Add for 36 Machine-Gun mules		...	108	
			4,108	
Add 20 per cent for opening out		...	820	
			4,928	

Total length equals roughly about 3 miles.

REMARKS BY ADJUDICATING OFFICER.

The adjudication of the best solution in January's competition has proved no easy task; 20 solutions were received, and several of them are almost of equal merit.

The problem would not be an easy one in actual warfare, and all officers will agree that the chances against complete success would be considerable. The scheme was, however, intended to give an example of the problem presented to a staff officer to the O. C. a flying column during the late operations in WAZIRISTAN. There seems no doubt that MAZALDIN is too far off to admit of a surprise at the end of a long night march. A night march over rocky ground is very fatiguing and the distance seems prohibitive. Most of the solvers are agreed that the only possibility to get within striking distance of MAZALDIN at the end of the first march and to trust to deceiving the enemy as to the real objective. Some solvers go the length of suggesting that the troops at MAKIM and KANIGURAM should be utilized for the purpose of deceiving the enemy still further by feints. For purposes of schemes it is absolutely necessary to work on the "data" given. On service it might be possible to persuade the G. O. C. that a little extra assistance would be beneficial;

F-2

but then again the G. O. C. might have good reasons for refusing that assistance. On paper, therefore, it is wiser to confine oneself strictly to the material placed at one's disposal.

Several solvers failed to grasp the scheme. One solver commences with the assumption that "no date being given, he can select his own time of year."

The date was carefully given in the scheme, as the operation would only be possible at certain seasons of the year. Several solvers omit to note the fact that they were asked to place themselves in the position of a "Staff Officer to Colonel X."

In the winning solution by "Stand Sure" the method of surrounding the village seems open to criticism. It would appear wiser to move on WARZAKAI NARAI in a concentrated force, and then to arrange for surrounding the village. Night marches across country are always difficult, while the more numerous the columns and the longer the distance to cover, the greater the danger of failure. As WARZAKAI NARAI is one mile from the village, it would almost seem possible to use it as a place of assembly from which the various columns might be diverted so as to be in position before dawn. The risk of premature discovery would appear no greater than with several columns blundering across country in the dark, while the chances of columns going astray or failing to keep to their timings would be lessened.

PRECIS OF FOREIGN MILITARY JOURNALS.

FRENCH PAPERS.

BY CAPTAIN W. L. J. CAREY, R.A.

REVUE MILITAIRE SUISSE.

New Rifle Bullets.

The May number provides an excellent survey of the stage of development at which the modern rifle cartridge has arrived. The ballistics of the rifle have been hitherto developed on the lines of an increase to the initial velocity of the bullet. And the weight of this latter has been kept as high as possible, with the object of obtaining the density of transverse section necessary to maintain a sufficient reserve of energy at long ranges. Of two projectiles of the same calibre, and fired with the same initial velocity, but of different weights, it is evident that the heavier represents the greater momentum; the energy lost in overcoming the same resistance represents a smaller portion of the initial energy, consequently the velocity decreases less rapidly, and therefore the range is greater than that of the lighter projectile.

The sectional density—i.e., the weight per square centimetre of the transverse section—gradually increased from the 20 *grammes* of the muzzle-loader to the 31 *grammes* of the modern breech-loader with smokeless powder. Moreover, since the total weight of the projectile is an important factor in the force of recoil (which must be kept within certain limits to avoid affecting the accuracy of fire), the increase of sectional density of necessity led to a decrease of calibre, which came down from 11 *mm.* to about 8 *mm.* in most of the European armies.

Following the same plan, in some countries better results have been sought by decreasing down to 6.5 *mm.* with a muzzle velocity of 730 *m.* And as a matter of fact these rifles give better ballistics than the 8 *mm.* calibres with 620 *m.* initial velocity. But to adopt a new calibre, and consequently a new rifle is a matter of considerable financial importance. Endeavours have therefore been made first in France, and then in Germany, to improve the ballistic results by merely altering the projectile and the propellant, without altering the rifle, except for the sights and cartridge chamber.

The new type of cartridge termed the "*balle D*" in France and the "*cartouche S*" in Germany doubtless denotes a state of transition (perhaps preceding the automatic rifle, or a new propellant). But it must be said that it has given a much greater dangerous zone at decisive ranges, although both weight and sectional density have been decreased. This is only an apparent paradox. Actually, the advantage is obtained from the greater initial energy, which is so large

that the reduced density has no effect, except at ranges at which it is of little importance. The high initial energy with a lighter projectile requires a higher muzzle velocity, and the result is a greater resistance of the air (which increases as the square of the velocity). To diminish this disadvantage the shape of the projectile has been altered, the conical part being longer than the diameter. Thus by increasing the initial velocity and altering the shape the improvement in ballistics is as great as has hitherto been obtained by reductions in calibre.

It is remarkable that this lengthened form of head was not discovered earlier. It is asserted that it has no injurious effect on the stability of the projectile. Hitherto great importance has always been attached to the perfect centring of the projectile in the bore, and for this reason the cylindrical portion was invariably lengthened as much as possible.

It is still more remarkable that according to official reports the same rifling suits the new projectile and the old. On the other hand it is stated that the stability of the new bullet is far from perfect, and that its accuracy is by no means as great as the official view would have us believe.

The tendency of the projectile to "wobble" (*papillonner*) is shown by the fact that the fine copper threads used to measure the initial velocity turn the new bullets out of their course in a most extraordinary manner, whereas the old projectiles never deviated from the line. In clay the old bullets made straight perforations. The new ones take an erratic course following the line of least resistance, and are usually found point to the rear. This explains the small penetration into wood at short ranges, a circumstance unknown with jacketed bullets.

The French Cartridge with the "D" Bullet.

As the large size of the base of the Lebel cartridge allows of a larger charge, it is filled with 3.1 grammes of a new and improved powder. The velocity at 25 *m.* from the muzzle is 700 metres per second, which with a weight of 12.8 grammes represent an energy of 344 kilogramme metres. The cigar-shaped bullet is 39.3 millimetres long and has a maximum diameter of 8.3 millimetres. Thanks to an alloy of copper there is no need for a jacket. This homogeneous composition reduces the possibility of deformation to a minimum, and consequently increases the penetration. The reduced diameter of the base of the bullet is not a new invention. The Prussian fusil bullet in 1841 was of this shape.

The German "S" Cartridge.

The charge of powder laminae of a new composition is 3.2 grammes. The velocity at 25 *m.* is 860 *m.* The projectile is 28 millimetres in length, diameter (maximum) 8.2 millimetres; the hardened lead core has a steel jacket .5 millimetres thick.

Comparative Table of some Modern Cartridges.

	Swiss M. 89.	Lebel 86.	Mauser 98.	"D" Bullet.	"S" Bullet.	Mannli- cher 1900.	(English) Axite 375-308
Calibre in <i>mm</i> ...	7.5	8	7.9	8	7.9	6.5	7.65
Weight of bullet in <i>gr.</i>	13.8	15	14.7	12.8	10	10.1	12.9
Sectional density in <i>gr. per cm².</i>	31	29.8	30	25.6	20.1	31	28.2
Initial velocity in <i>ms</i>	610	638	640	726	875	740	830
Initial energy in <i>kym.</i>	270	312	216	344	390	294	453
Pressure in <i>kg per cm.</i>	2,600	2,900	2,300	...	...	3,200	3,700
Initial energy in <i>kym per cm.</i>	6.1	6.24	6.32	6.88	8.0	8.8	9.98
Height of trajectory at 1,000 metres in metres.	11	9.8	10.2	5.4	5.9	7.11	6

Artillery matters on the continent.

The competition between the rival artilleries is not less keen than heretofore. The April number chronicles the rearmament of the batteries of the German Guard, XIV, XV and XVI Corps with the new gun, called the "new model, 96." This gun is not unlike the French. The breech closing arrangement is the Ehrhardt single movement wedge. The calibre is 7.7 *cm.* The shield is perpendicular, with an opening for gun and sights. The lower part is jointed and can be lifted clear of the ground. The carriage is much like the French, except that brackets are made of two V-shaped pieces. No spade is used. The horse artillery gun is some 50 *kg.* lighter than the field artillery gun. It is not known whether the wagons are protected.

In France the latest idea is the conversion of the existing four gun batteries into six gun batteries. This is due to the Germans, in spite of General Von Rohne having adopted the six gun unit. The July number remarks that there are not sufficient trained Captains to command the batteries, and sarcastically comments on the cheerful prospect before the man who now has all he can do to manage four guns and 24 vehicles, whereas in the future he will have six guns and 30 vehicles under his orders.

Military Automobiles.

The automobile forms the subject of much discussion in continental armies at the present day. The April number, commenting on the Swiss manoeuvres of 1905, devotes some space to the question. The manoeuvring division, it appears, was provided with an 18 H. P. machine, which rendered excellent service over the most difficult

roads, and, best of all, had no breakdowns. The author epitomises the experience gained somewhat as follows :—

The auto-car enables orders, etc., to be carried in all directions with the utmost rapidity. (This is especially valuable during a mobilisation.) Reconnaissance is greatly facilitated. Positions are inspected without difficulty. A divisional commander can visit his troops and personally give his instructions. For instance, on one occasion the commander of the manœuvring division had three columns advancing from different places situated far apart. He was present at the concentration of two, and might have gone to the third.

Again, a commander using an automobile confers at his ease with his staff, consults maps, dictates orders, etc. Senior officers generally avoid the fatigue incidental to long rides, and retain the clearness of brain necessary to appreciate a situation or come to a decision.

The author recommends a corps of volunteer motorists. He gives a round figure of 50 machines as being required for the Swiss field army. These he thinks there would be no difficulty in obtaining. The personnel should wear a distinctive uniform.

An important point in his opinion is that the Federal Government should maintain a reserve of patrol. Further, the question of tractors and lorries should be borne in mind.

In the May number the Austrian correspondent records the formation of a volunteer motor-car corps in that country. The military authorities have taken the matter up in earnest and the Intendence is conducting enquiries on the following lines :—

1. Theory and practice of all new inventions and improvements in auto-vehicles.
2. Compilation of all information affecting the automobile.
3. Acquisition and trial of all machines and rules for their employment, care and preservation.
4. Theoretical and practical instruction of officers and troops in the use of motor vehicles.
5. Maintenance of a register of all private and military machines. Publication of a list of chauffeurs, drivers and motor-cyclists of all ranks.
6. Maintenance of a register of all auto-cars in foreign armies.

It is proposed to hold an annual course of instruction lasting one month. It is hoped to create in this way an auto-mobile park which will form the centre for all experiments, etc. Captain Wolf, a well-known motorist, and Vice-President of the Austria Motor Club, will be at the head of the new service.

The August number gives a further description of this club. The fundamental principles of the organisation are said to be—

1. The automobile volunteer corps is intended to assist the army in the field, especially by undertaking the transmission orders and reports.
2. The Imperial Minister of War in communication with the Minister of National Defence is responsible for the strength of the

corps and its instruction. The President of the Austrian Automobile Club is responsible for carrying out the measures necessary for its organisation.

3. The members of the corps engage to serve with the army in war time.

4. The President of the A. C. A. is the commandant of the corps.

5. In peace time the commandant, under the instructions of the Minister of War, carries out the summoning and posting of volunteers. In war this is done by the army administration.

6. At all drills, etc., the volunteers wear a special uniform, and on field service they wear in addition a belt and side-arms. They have the right to wear the uniform on certain occasions when not on duty.

7. Every volunteer is paid 15 crowns for a car, 6 for a cycle, also fuel for the machine and allowances for lodging and travelling.

In war time volunteers who are neither officers nor cadets receive the salary of a first lieutenant. Those who bring a car receive field compensation of 1,000 crowns, for a cycle 200 crowns.

8. There are two uniforms—field service and review order.

The uniform consists of a blue motor cap with the imperial eagle, and a winged wheel, a blue tunic with green piping, yellow buttons and yellow braid shoulder-straps, grey breeches, yellow gaiters and boots, officers' cloak grey, a yellow belt with pouches, and a revolver in a yellow pouch worn on a shoulder belt. In review order the breeches are replaced by blue trousers with a green stripe and the revolver by a sword.

The example of this new organisation is being followed in Bohemia where automobile clubs have organised manœuvres of volunteer motor-car corps with excellent results.

The experiments with automobile traction for artillery, baggage trains, etc., have been very successful.

Swiss Manœuvres in 1905.

The April number offers some interesting remarks on the Swiss 1905 manœuvres. The portion dealing with auto-cars has already been referred to. The next subject of remark is the telephone. The uses of this device for military purposes are as numerous as they are varied. During a battle the telephone maintains close and constant communication between the several staffs, and between the out-posts and the main body. This enables orders to be transmitted, and reports from cavalry patrols to be despatched, with the greatest rapidity. On the march itself the telephone is not so useful. But it may be possible by using the existing telephone lines along the roads to establish communication between the main body and advance guard, or between fractions of the main body. On the other hand in the combat the advantages of the telephone cannot be denied. The ancient dramatic idea of a general directing the fight from the top of a hill in full view of the enemy has long ceased

to represent the facts. Under modern conditions a "*rafale*" of shrapnel would dispose of the "brilliant staff" in a few seconds.

In reality the general is far away from the firing line, safe from shell fire in some hollow of the ground, behind a wood or a house.

It is here that he receives reports and issues orders availing himself of every advantage that modern science places at his disposal. Telephones, telegraphs with or without wires, helios, all are used; the reasons being that the field of battle is very extensive, and that movements of orderlies under fire in the open have become absolutely impossible.

In these manœuvres the staff of the manœuvring division on one occasion was at Schlossuyl. The commanding officer was in constant telephonic communication with his left wing, 5½ killometres away, and also with his balloonists at Richigen, 2½ killometres from Schlossuyl.

A regular staff of telephonists is recommended for the army and a list of all places where telephones exist should be kept up. In this way the full value of the telephone could be obtained.

Balloons.

These were very useful though perhaps rather apt to multiply reports unnecessarily. It is suggested that a trained staff officer should form a permanent feature of the balloon section. Otherwise errors in observations are not infrequent. The balloon might be employed to convey signals to troops, which are now imperfectly given by trumpet.

New Invisible Uniforms.

The question of uniform is attracting no little attention. In the June number the German correspondent describes some experimental uniforms worn by the 145th Infantry before the Emperor at Metz. Two companies wore a grey which has been under trial for some time. Two others wore a greyish green uniform; tunic with pockets; buttons neutral colour; trousers and helmet the same green as the tunic, with yellow fittings; green haversack with yellow leather strap; Three narrow green cartridge pouches on the belt; mess tin covered with green material, bread bag and water bottle the same; boots not blacked. This was found to be a very fairly invisible uniform. The April number has an interesting article on the Swiss experiments in the same direction. Elaborate comparative trials were carried out to ascertain the relative visibility of various shades and colours. The result was in favour of light grey. This has the disadvantage of being easily soiled, but it was found that the colour washed well and better than dark shades. Facings might be of any colour; dark green with black piping and yellow buttons will be tried.

The head dress has formed the subject of much discussion. It must protect the head from heat, cold, and rain. It must therefore

be waterproof. It must not hinder the soldier from firing in any position. Lastly it must be light and well balanced.

The two types which best answer these requirements are the helmet and the shako. These will be covered with cloth of the same colour (light grey) as the uniform. The material will be cork, with a metal crest on the helmet.

The tunic is to be replaced by a loose jumper (*vareuse*). This will have pockets on the chest, and in the skirts, one of which will go all round the garment. The collar may be stand up or turn down.

Putties will be tried.

The July number has an interesting summary of the matter. All European armies, it says, are experimenting with uniforms. The points to be considered are numerous, but there is one on which all are agreed. That is, that under modern conditions the uniform must be as invisible as possible. This invisibility is the property of neutral colours on a light ground, as opposed to dark shades.

It has taken 20 years to arrive at this conclusion. In 1881 the English in the Transvaal were forced to acknowledge the unsuitability of their scarlet and blue uniforms, and hastily improvised khaki. The lessons of the experience, however, were not taken to heart by armies in general, and the dark coloured gold-laced uniforms continued in use.

It needed the more striking example of the war in the Far East to impress the gravity of the situation on the military world. The Japanese had a black uniform, the Russians wore dark green. From the first affair on the Yalu the unsuitability of the dark shades was evident. Every man showed up clearly against the greyish yellow background of the terrain, and offered an excellent mark to the enemy.

The result was the introduction of khaki into the Japanese army there and then. Now, in peace time, khaki is the working dress of every Japanese soldier.

Since this instructive example civilised armies have been experimenting with light colours.

The latest French idea is a greyish blue uniform of natural wool. The jumper (*vareuse*) trousers and cape are all of the same material. The head dresses are a stiff *képi* and a helmet of colonial pattern.

In Russia, however, in spite of the experience of the war, the dark green tunic is to be retained. But the greyish blue trouser is to be introduced into the infantry, as well as the other arms. The fact that of 22 members of the Committee on the uniform question only two had been in Manchuria may have something to do with this curious decision.

New Swiss Artillery Drill.

The June number gives a long extract from the new Swiss artillery drill, a few of the chief points in which may be noted though

there is nothing really new. The guiding principle all through appears to be to show that artillery is the auxiliary arm, and the rules abound with axioms such as these :—

Infantry action decides the combat. Artillery fire prepares the way for the infantry advance, checks the opposing infantry, occupies the attention of the adversary's artillery, and supports its own infantry. Artillery action should consequently be in constant and intimate connection with that of the infantry.

The infantry deployment is the starting point of all artillery action. The sole end and aim of artillery is to support the infantry with its fire, and to exert all its power to enable the infantry to obtain the superiority and keep it. And to ensure that this end may be attained the artillery must be so employed that its superiority of fire may be absolute.

Generally speaking the rôle of artillery is—

On the offensive :—

To silence the enemy's artillery, which arrests the progress of the attacking troops.

To destroy material obstacles to the advance.

To compel the defending infantry to take cover, and consequently to be silent or shoot wildly.

To facilitate the advance of the attacking infantry by enveloping the enemy's line in a cloud of smoke.

To prevent any movement of the adversary's reserves.

On the defensive :—

To arrest the advance of the enemy's infantry.

To relieve the defending infantry from the enemy's artillery fire so that it may be able to check the advancing of the enemy's infantry with its own rifle fire.

GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR, *p.s.c.*, 20TH INFANTRY.

Internationale Revue ueber die gesamten Armeen und Flotten, June to August and Supplements:—The manœuvres this year in Germany are said to have for their principal object the division of the question as to the best formation of the Army Corps whether these should consist of three Divisions or continue to be formed of two Divisions.

Now that the official accounts of the Japanese losses is becoming known it is seen that these have been far greater than was at first thought. In the Franco-German war the German losses were 40,743 killed, 88,837 wounded. In the late war the Japanese losses have been 80,378 killed, 170,129 wounded. The Japanese losses have been thus nearly double those of the German. Though this war lasted longer than that of 1870-71 yet the total number of Japanese employed is much smaller than that of the German armies. Another interesting point of comparison is that of the loss of officers in proportion to the number of non-commissioned officers and men. Among the Germans 1 officer fell for every 20 of the rank and file, whereas among the Japanese the proportion was only 1 to 37.

The question of the colour and invisibility of uniform has been troubling the military authorities of all the armies of the world. The experiences of the late war have made the Japanese fix on khaki, using drill for summer and serge for winter wear. This example has been followed by the Chinese, whose present tendency is to imitate with slavish minuteness the outward form of things Japanese. The United States of America also have decided in favour of khaki after many experiments. Denmark has fixed on a greenish-grey as the best colour for the uniforms of her army. The Danish experiments brought out the fact that all colours were equally visible on the skyline with the blue sky as a background. Sweden is inclined to adopt a grey-green coat whilst retaining the blue trousers, with which her soldiers are at present clothed. Germany has not as yet come to any decision but is experimenting with greys and grey-greens. Italy, partly from conviction partly from motives of economy, seems inclined to rest satisfied with its present light blue-grey colour. In Austria extensive experiments have been carried out with cloths of earth-colour, grey and khaki. The favourite colour so far appears to be the light-grey, which has long been worn by the Imperial Tyrolese Jögers. This summer, however, further experiments are to be made with unbleached linen and fustian. Switzerland, which had at first determined on retaining dark-blue, has now inclined to light-grey,

but has not as yet come to any definite decision. France also has not as yet fixed on any colour but seems to favour an undecided blue called "*gris de fer*" with buttons and badges of oxidised metal. In Russia the whole question is being considered by a special Committee under the presidency of General Batjanoff. Here, however, it is more a question of equipment and other such details, as the Russians seem satisfied with the invisibility of their traditional grey clothing. Norway declares that among the ice and snow of her northern latitudes dark-blue is the best and least visible colour. Among the green fields and forests of Europe the Continental Powers find that khaki requires some admixture of grey or green to be really invisible.

The best of the three numbers under review contains an account of the great parade in Tokio, in which details from every Division, employed in the war took part and marched past before the Emperor. It is noteworthy that Japan as the result of one of the "lessons of the war" has increased the number of yearly admissions of officers to the Staff College from 50 to 100.

French Supplement No. 88 gives an account with two pictures of the German field wireless telegraph apparatus, which has been used so successfully in South-West Africa.

Beiheft No. 75 contains a full account of the Turkish Army. No. 76 discusses the highest command of the French forces, and, while acknowledging that France has made great strides in the command of her armies and her fleet, considers the part that politics play in the choice of her War and Naval Ministers as a great evil. The author also thinks that the numerous "*conseils*" and "*comités*" which govern the French forces form a machine, whose parts are too complicated for smooth working.

No. 76 is devoted to a review of our "Combined Training, 1905," which the German author considers to be a very great advance on that of 1902. He praises especially the manner in which the offensive spirit is emphasised in this little book. The only fault he can find is that there is too much about the attack and defense of prepared positions, and that the case of two opponents meeting without either having prepared a defensive position beforehand is insufficiently considered.

Die Militärische Welt, June to August :—The first two numbers are devoted to a celebration of the Austrian arms in 1866, and naturally to the Italian field where these arms were more successful than in Bohemia. The last number has an interesting illustrated account of the military missions, which have gone to Persia with a view to instructing the Persian forces. An excellent review of Russia after the war is to be found in this number as the author remarks "Dark is Russia's present, darker is her future!"

4. At 5-30 P.M. your force is disposed as follows :—

<i>Rear Guard.</i>	{	2 Sections Mountain Battery WAZARKAI N.	
	{	2 Battalions.	
	{	1 Mountain Battery	GURBAZ.
	{	$\frac{1}{2}$ Co. Sappers and Miners.	
<i>Main Body.</i>	{	2 $\frac{1}{2}$ Battalions.	
	{	Field Hospital.	
	{	2nd line transport of force.	
	{	$\frac{1}{2}$ Squadron Cavalry	MANAI KACH.
<i>Advanced Guard.</i>	{	1 Section Mountain Battery.	
	{	$\frac{1}{2}$ Battalion.	

5. Required—

(a) An appreciation of the situation with a brief description of your proposed plan.

(b) The orders you issue that evening.

[This competition will close on the 1st March 1907. Solutions received after that date will not be considered.]

TACTICAL SCHEME COMPETITION, OCTOBER 1906.

References are to a Map which will be supplied to intending competitors who should forward their names, together with the sum of Re. 1. to the Secretary of the Institution from whom they will receive all instructions.

GENERAL IDEA.

1. A Red (Southern) army is operating some 10 miles east of the limit of the map against a Green (Northern) army.

2. The camel road by the LARE LAR. P. and KANIGURAM is one of the lines of communication of the Red army.

3. Red army has detached a force to DOTOI to contain Green forces which are to the northward of that place. This detached force is dependent on a dépôt at KANIGURAM for its supply, and in order to protect its own communications is obliged to retire by WAZARKAI north to GURBAZ on the approach of two Green forces, a western one moving southward from DAMSARE NARAI and an eastern one moving south-west from DARIAWASTI.

4. The rivers are in flood, the BARIALA and SHAWAL streams are impassable except at the crossing west of GULBAZ.

5. The inhabitants, armed tribesmen, are on the whole friendly to Red, but are inclined to maraud if opportunity offers.

SPECIAL IDEA.

1. You are in command of the Red detached force, strength as per margin, and arrive with the main body at GULBAZ at 5 P. M. on April 2nd, having marched from DOTOI that morning. Your rear guard has been engaged during the day with the Western Green force which has halted near MURSAL.

**1 Squadron Cavalry.
2 Mountain Batteries.
1 Co. Sappers & Miners.
5 Battalions Infantry.
1 Field Hospital.
2 lines transport pack-mules carrying 2 days' supplies.**

Your advanced guard has been ordered to secure the KHINA NARAI.

2. At 5.30 P.M. you receive information from the advanced guard cavalry that Green troops are occupying the KHINA NARAI.

3. Reliable information gives the strength of the Western Green force as four Battalions, the Eastern one as three Battalions, each force eight mountain guns and a few Mounted Infantry; you also learn that the Eastern force commenced to pass HAIDAR KHEL at 11 A.M. that morning.

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	{	2 Battalions.	
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<i>Advanced Guard.</i>	{	1 Section Mountain Battery.	
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Reconnaissance

These were very useful, though perhaps rather apt to multiply reports unnecessarily. It is suggested that a trained staff officer should form a permanent feature of the balloon section. Otherwise errors in observations are not infrequent. The balloon might be employed to convey signals to troops, which are now imperfectly given by trumpet.

New Lothar Uniforms.

The question of uniform is attracting no little attention. In the June number the German correspondent describes some experimental uniforms worn by the 14th Infantry before the Emperor at Metz. Two companies wore a grey which has been under trial for some time. Two others wore a greyish-green uniform, tunic with pockets, buttons, and collar of the same, and helmet the same green as the tunic with yellow fittings, green haversack with yellow leather straps. The new green uniform has pouches on the belt, knapsack covered with green material, knapsack bag and water bottle the same. Boots not black. This was found to be a very satisfactory uniform. The April number has an interesting article on the Swiss experiments in the same direction. Elaborate comparative studies were conducted to ascertain the relative visibility of different shades of colours. The result was in favour of a grey. The shades of grey were of the following values: but it was found that the most effective colour for the purpose of studies. Experiments of a different kind were also conducted, black, poppy and yellow being used for the purpose.

The French press has been particularly anxious to know. I must protect the helmet on the head of our general. The staff officer

be waterproof. It must not hinder the soldier from firing in any position. Lastly it must be light and well balanced.

The two types which best answer these requirements are the helmet and the shako. These will be covered with cloth of the same colour (light grey) as the uniform. The material will be cork, with a metal crest on the helmet.

The tunic is to be replaced by a loose jumper (*vareuse*). This will have pockets on the chest, and in the skirts, one of which will go all round the garment. The collar may be stand up or turn down.

Putties will be tried.

The July number has an interesting summary of the matter. All European armies, it says, are experimenting with uniforms. The points to be considered are numerous, but there is one on which all are agreed. That is, that under modern conditions the uniform must be as invisible as possible. This invisibility is the property of neutral colours on a light ground, as opposed to dark shades.

It has taken 20 years to arrive at this conclusion. In 1881 the English in the Transvaal were forced to acknowledge the unsuitability of their scarlet and blue uniforms, and hastily improvised khaki. The lessons of the experience, however, were not taken to heart by armies in general, and the dark coloured gold-laced uniforms continued in use.

It needed the more striking example of the war in the Far East to impress the gravity of the situation on the military world. The Japanese had a black uniform, the Russians wore dark green. From the first affair on the Yalu the unsuitability of the dark shades was evident. Every man showed up clearly against the greyish yellow background of the terrain, and offered an excellent mark to the enemy.

The result was the introduction of khaki into the Japanese army there and then. Now, in peace time, khaki is the working dress of every Japanese soldier.

Since this instructive example civilised armies have been experimenting with light colours.

The latest French idea is a greyish blue uniform of natural wool. The jumper (*vareuse*) trousers and cape are all of the same material. The head dresses are a stiff *képi* and a helmet of colonial pattern.

In Russia, however, in spite of the experience of the war, the dark green tunic is to be retained. But the greyish blue trouser is to be introduced into the infantry, as well as the other arms. The fact that of 22 members of the Committee on the uniform question only two had been in Manchuria may have something to do with this curious decision.

New Swiss Artillery Drill.

The June number gives a long extract from the new Swiss artillery drill, a few of the chief points in which may be noted though

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there is nothing really new. The guiding principle all through appears to be to show that artillery is the auxiliary arm, and the rules abound with axioms such as these:—

Infantry action decides the combat. Artillery fire prepares the way for the infantry advance, checks the opposing infantry, occupies the attention of the adversary's artillery, and supports its own infantry. Artillery action should consequently be in constant and intimate connection with that of the infantry.

The infantry deployment is the starting point of all artillery action. The sole end and aim of artillery is to support the infantry with its fire, and to exert all its power to enable the infantry to obtain the superiority and keep it. And to ensure that this end may be attained the artillery must be so employed that its superiority of fire may be absolute.

Generally speaking the rôle of artillery is—

On the offensive:—

To silence the enemy's artillery, which arrests the progress of the attacking troops.

To destroy material obstacles to the advance.

To compel the defending infantry to take cover, and consequently to be silent or shoot wildly.

To facilitate the advance of the attacking infantry by enveloping the enemy's line in a cloud of smoke.

To prevent any movement of the adversary's reserves.

On the defensive:—

To arrest the advance of the enemy's infantry.

To relieve the defending infantry from the enemy's artillery fire so that it may be able to check the advancing of the enemy's infantry with its own rifle fire.

GERMAN PAPERS.

BY MAJOR H. W. R. SENIOR, *p.s.c.*, 20TH INFANTRY.

*Internationale Revue ueber die gesamten Armeen und Flotten, June to August and Supplements:—*The manœuvres this year in Germany are said to have for their principal object the division of the question as to the best formation of the Army Corps whether these should consist of three Divisions or continue to be formed of two Divisions.

Now that the official accounts of the Japanese losses is becoming known it is seen that these have been far greater than was at first thought. In the Franco-German war the German losses were 40,743 killed, 88,837 wounded. In the late war the Japanese losses have been 80,378 killed, 170,129 wounded. The Japanese losses have been thus nearly double those of the German. Though this war lasted longer than that of 1870-71 yet the total number of Japanese employed is much smaller than that of the German armies. Another interesting point of comparison is that of the loss of officers in proportion to the number of non-commissioned officers and men. Among the Germans 1 officer fell for every 20 of the rank and file, whereas among the Japanese the proportion was only 1 to 37.

The question of the colour and invisibility of uniform has been troubling the military authorities of all the armies of the world. The experiences of the late war have made the Japanese fix on khaki, using drill for summer and serge for winter wear. This example has been followed by the Chinese, whose present tendency is to imitate with slavish minuteness the outward form of things Japanese. The United States of America also have decided in favour of khaki after many experiments. Denmark has fixed on a greenish-grey as the best colour for the uniforms of her army. The Danish experiments brought out the fact that all colours were equally visible on the skyline with the blue sky as a background. Sweden is inclined to adopt a grey-green coat whilst retaining the blue trousers, with which her soldiers are at present clothed. Germany has not as yet come to any decision but is experimenting with greys and grey-greens. Italy, partly from conviction partly from motives of economy, seems inclined to rest satisfied with its present light blue-grey colour. In Austria extensive experiments have been carried out with cloths of earth-colour, grey and khaki. The favourite colour so far appears to be the light-grey, which has long been worn by the Imperial Tyrolean Jögers. This summer, however, further experiments are to be made with unbleached linen and fustian. Switzerland, which had at first determined on retaining dark-blue, has now inclined to light-grey,

but has not as yet come to any definite decision. France also has not as yet fixed on any colour but seems to favour an undecided blue called "*gris de fer*" with buttons and badges of oxidised metal. In Russia the whole question is being considered by a special Committee under the presidency of General Batjagoff. Here, however, it is more a question of equipment and other such details, as the Russians seem satisfied with the invisibility of their traditional grey clothing. Norway declares that among the ice and snow of her northern latitudes dark-blue is the best and least visible colour. Among the green fields and forests of Europe the Continental Powers find that khaki requires some admixture of grey or green to be really invisible.

The best of the three numbers under review contains an account of the great parade in Tokio, in which details from every Division employed in the war took part and marched past before the Emperor. It is noteworthy that Japan as the result of one of the "lessons of the war" has increased the number of yearly admissions of officers to the Staff College from 50 to 100.

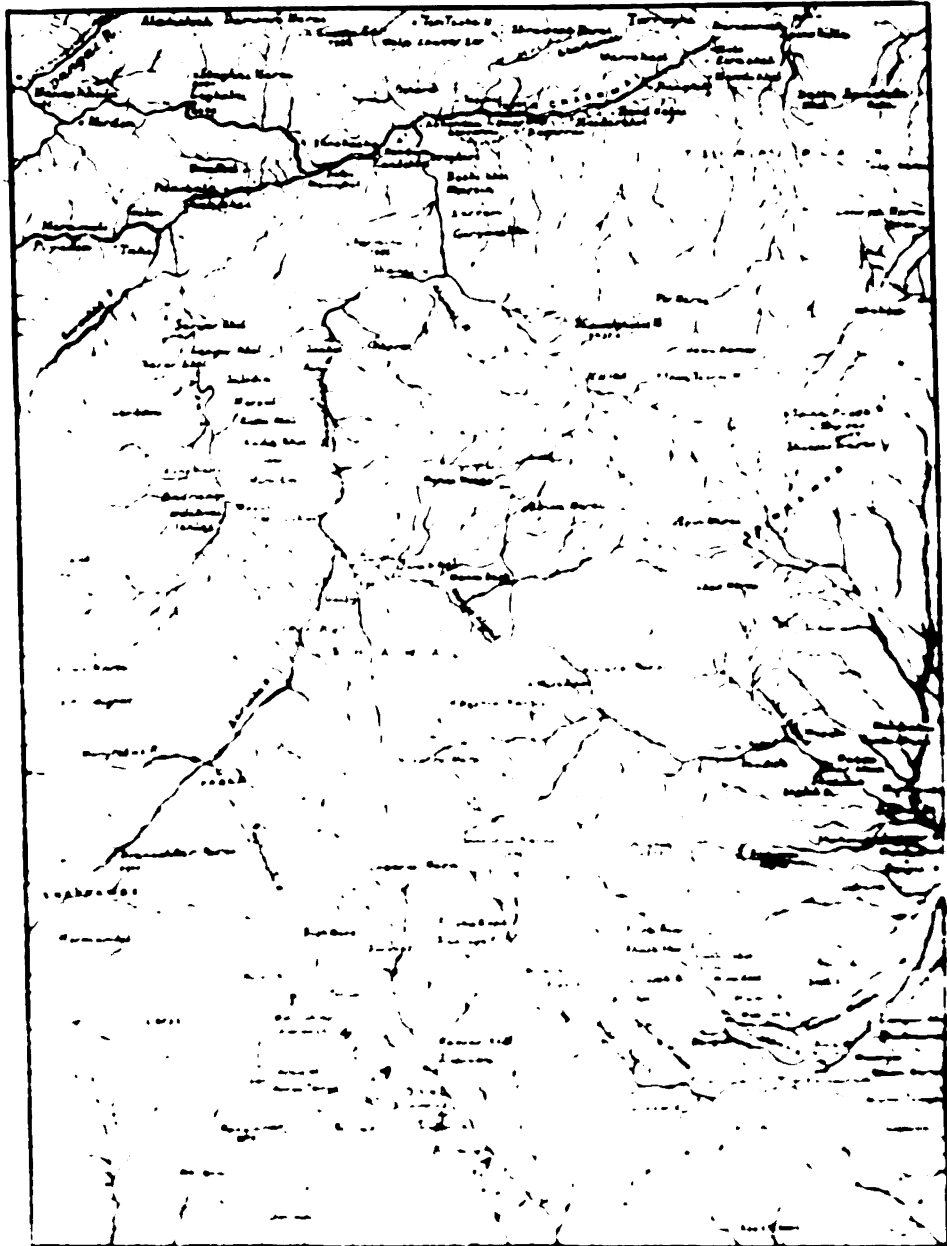
French Supplement No. 88 gives an account with two pictures of the German field wireless telegraph apparatus, which has been used so successfully in South West Africa.

Revue No. 75 contains a full account of the Turkish Army. No. 76 discusses the highest command of the French forces, and while acknowledging that France has made great strides in the command of her armies and her fleet, considers the part that politics play in the choice of her War and Naval Ministers as a great evil. The author also thinks that the numerous "*conseils*" and "*comités*" which govern the French forces form a machine, whose parts are too complicated for smooth working.

No. 76 is devoted to a review of our "*Combined Training 1905*," which the German author considers to be a very great advance on that of 1902. He praises especially the manner in which the offensive spirit is emphasised in this little book. The only fault he can find is that there is too much about the attack and defense of prepared positions, and that the case of two opponents meeting without either having prepared a defensive position beforehand is insufficiently considered.

Die Mittheilungen Welt June to August. The first two numbers are devoted to a celebration of the Austrian arms in 1866, and naturally to the Prussian side where these arms were more successful than in Bohemia. The last number has an interesting illustrated account of the military missions which have gone to Persia with a view to instructing the Persian forces. An excellent review of Russia after the war is to be found in this number, as the author remarks "Dark is Russia's present, darker is her future."

MAP C



(---) Road
 (---) Mule Road
 (---) Footpath

TACTICAL SCHEME COMPETITION, OCTOBER 1906.

References are to a Map which will be supplied to intending competitors who should forward their names, together with the sum of Re. 1. to the Secretary of the Institution from whom they will receive all instructions.

GENERAL IDEA.

1. A Red (Southern) army is operating some 10 miles east of the limit of the map against a Green (Northern) army.

2. The camel road by the LARE LAR. P. and KANIGURAM is one of the lines of communication of the Red army.

3. Red army has detached a force to DOTOI to contain Green forces which are to the northward of that place. This detached force is dependent on a depôt at KANIGURAM for its supply, and in order to protect its own communications is obliged to retire by WAZARKAI north to GURBAZ on the approach of two Green forces, a western one moving southward from DAMSARE NARAI and an eastern one moving south-west from DARIAWASTI.

4. The rivers are in flood, the BARIALA and SHAWAL streams are impassable except at the crossing west of GULBAZ.

5. The inhabitants, armed tribesmen, are on the whole friendly to Red, but are inclined to maraud if opportunity offers.

SPECIAL IDEA.

1. You are in command of the Red detached force, strength as per margin, and arrive with the main body at GULBAZ at 5 P. M. on April 2nd, having marched from DOTOI that morning. Your rear guard has been engaged during the day with the Western Green force which has halted near MURSAL.

Your advanced guard has been ordered to secure the KHINA NARAI.

2. At 5:30 P.M. you receive information from the advanced guard cavalry that Green troops are occupying the KHINA NARAI.

3. Reliable information gives the strength of the Western Green force as four Battalions, the Eastern one as three Battalions, each force eight mountain guns and a few Mounted Infantry; you also learn that the Eastern force commenced to pass HAIDAR KHEL at 11 A.M. that morning.

4. At 5-30 p.m. your force is disposed as follows:—

<i>Rear Guard.</i>	{	2 Sections Mountain Battery WAZARKAI N.
	{	2 Battalions.
	{	1 Mountain Battery GURBAZ
	{	1 Co. Sappers and Miners.
<i>Main Body.</i>	{	2½ Battalions
	{	Field Hospital.
		2nd line transport of force.
<i>Advanced Guard.</i>	{	1 Squadron Cavalry MANAI KACH.
	{	1 Section Mountain Battery
	{	1 Battalion.

5. Required—

(a) An appreciation of the situation with a brief description of your proposed plan.

(b) The orders you issue that evening.

[This competition will close on the 1st March 1907—Schemes received after that date will not be considered.]

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